

TEACHER ACTION GUIDE





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WHAT IS GENERATION EARTH

Generation Earth is an environmental education program of the County of Los Angeles Department of Public Works.



Public Works serves approximately 10 million residents in Los Angeles County, which covers an area of 4,083 square miles. Public Works is responsible for designing, constructing, operating and maintaining roads and highways, flood control and water conservation facilities and water and sewer systems; operating airports; administering local public transit programs; managing capital projects for other County departments; meeting and monitoring environmental requirements; and providing general engineering and building regulation services for the unincorporated areas of the County. In addition, Public Works provides services to many cities within the County on a contract basis.

Los Angeles County covers 4,083 square miles, and 10,000,000 human inhabitants call it home. Our County is finding that its landfills are filling up one by one – making it imperative to find new ways to motivate a change in residents' behavior so they reduce the quantities of waste they generate and refrain from littering and illegal dumping. Also, even on the driest day of the year, approximately 100 million gallons of contaminated water and debris drain through the Los Angeles County storm drain system and flow, untreated, into the Pacific Ocean. On rainy days, the daily flow can increase to 10 billion gallons of water. This urban runoff carries toxic pollutants as well as trash into the ocean – which kills fish or makes them unfit to eat, causes illness in swimmers, creates litter strewn beaches, endangers aquatic birds, reduces beach attendance and tourist dollars, and costs millions in annual cleanup expenses and lost revenue.

WHAT IS GENERATION EARTH CONTINUED

“Generation Earth gives you the tools to take action and make a difference.”

— *High School Student*

While all these problems are multi-faceted, complex and expensive both environmentally and economically, their solution is actually simple – but not easy: teach County residents to reduce, reuse and recycle and then properly dispose of the rest.

In 1996, The Los Angeles County Department of Public Works decided to address these problems through an environmental education program. \$1 was charged for every ton of garbage dumped at County landfill sites, and those monies went to fund educational outreach. In 1997, as part of this outreach, the Department of Public Works engaged TreePeople – L.A.’s oldest and largest non-profit, environmental volunteer organization – to develop and implement an environmental education program primarily aimed at teens.

Generation Earth was then created for Los Angeles County’s middle & high school students to educate them to reduce the amount of waste going to landfills and pollutants going into our waterways. The program does this by assisting teachers, schools and communities in implementing campus and community projects that produce positive measurable impacts for our environment.

To this end, the Generation Earth program offers many facets of education and support including:

- Professional development workshops on service learning
- Year-round teacher support for projects
- Free bus program for field trips related to projects
- Waste reduction and recycling workshops
- Stormwater pollution prevention workshops
- Teen leadership program
- Battle of the Schools waste reduction competition
- Year round technical support

The Los Angeles County Department of Public Works is committed to protecting our communities and the environment and providing a higher quality of life for the citizens of Los Angeles County. We salute your efforts to ensure a better environment for all and know that together we can improve the quality of life for many generations to come.

A NOTE FROM A TEACHER

Six years ago, I was sitting exactly where you are. I attended my first Generation Earth service learning workshop on the recommendation of a fellow teacher. At that point, I had never heard of service learning or Generation Earth. After my training session with Generation Earth, I was ready to organize and implement my first service learning project: a school-wide recycling program. I knew I wanted my first project to occur in my Life Science class, but I was still nervous to begin. Using the lesson plans included in the Teacher Action Guide, the class soon was excited about designing a recycling program for the entire high school.

Shortly after beginning this project, I realized a very important fact: do not bite off more than you can chew the first year! A service learning project does not have to take an entire semester; it does not have to change the entire world; it does not have to be implemented all at once. As it turned out, the first year my students wrote and directed a short persuasive video to convince the administration of the need for a school-wide recycling program. The second year, my students collected student signatures on an informative petition that was presented to the Board of Education to get their support for this program. It was not until the third year of this project that the school-wide recycling program was actually up and running! My point of writing this to you is this: don't get discouraged. It doesn't have to happen overnight.

The changes that I saw in my students from each of these first three years were remarkable. Kids that had ditched daily now had near perfect attendance because they were responsible for a certain part of the project. Irresponsible students who frequently lost their school textbooks and their homework checked out and were responsible for expensive video equipment from the audiovisual department. Students who never said a peep in class were volunteering to speak before the school's administrative team. It is amazing how the student voice and student responsibility that come from a service learning project empower the students!

Six years later, I am the Service Learning Advocate for my high school. My students complete several projects a year: some of them long-term and some of them lasting only a day or two. But the level of participation from each student and the ownership that each student takes in these projects makes the learning effects last for a long, long time.


Sarah Utley

Biology/Environmental Science Teacher

ENVIRONMENTAL EDUCATION



In its 2002 publication, *Education & The Environment – Strategic Initiatives for Enhancing Education in California*, the California Department of Education states that, “Research and classroom-based studies show that students in experiential environment-based education programs learn better, are better citizens at school, and transfer their learning to new situations better. Environment-based education helps students to feel more confident, to feel a part of their community, and to think.”

What is environment-based education? Environment-based education focuses on educational results; using the environment to engage students in their education through “real-world” learning experiences, with the goals of helping them achieve higher levels of academic success as well as an understanding of and appreciation for the environment. When combined with environmental literacy – learning about and caring for the total environment, understanding how humans interact with and are dependent on natural ecosystems, and developing critical thinking skills to resolve environmental issues – students become motivated citizens who are informed about the impact that their lifestyle choices make on the health and safety of their planet. This is the aim of the Generation Earth program.



The touchstone definition of “environmental education” was developed in a 1978 UNESCO conference and published in what is called the “Tbilisi Declaration.” It outlines five objectives for environmental education:

AWARENESS – awareness and sensitivity to the total environment and its problems

KNOWLEDGE – experience in and understanding of the environment

ATTITUDES – concern for and participation in environmental improvement and protection

SKILLS – identifying and solving environmental problems

PARTICIPATION – active involvement in resolving environmental problems

MAKING THE CASE



“The program helped me in many areas. One is my biology class. Getting involved in nature hands-on has given me an edge in class. It has also helped me make money. Instead of throwing things away, I go recycle them and get money.”

— *High School Student*

In a landmark study conducted by the State Education and Environment Roundtable (Lieberman, G., & Hoody, 1998. Closing The Achievement Gap: Using the Environment as an Integrating Context for Learning), classroom-based case studies of 40 schools provided extensive evidence that “good environment-based education improves education in general and decreases discipline and attendance problems.” These results were reconfirmed in a joint study by the National Environmental Education and Training Foundation and North American Association for Environmental Education (Glenn, Joanne Lozar. 2000. Environment-based Education Creating High Performance Schools and Students) when results showed that students involved in environment-based education had improved math and reading scores, performed better in science and social studies, developed the ability to transfer familiar learning into unfamiliar contexts and learned to do science rather than learn about science. Subsequent studies funded by the California Department of Education (Lieberman, G., & Hoody. 2000. California Student Assessment Project: The Effects of Environment-based Education on Student Achievement; and, Lieberman, G., & Hoody. 2005. California Student Assessment Project: Phase Two) paired conventionally structured California schools with demographically similar schools that had reorganized their curriculum to use the environment as an integrating context for learning. These latter schools used proven educational practices, but emphasized the local community and natural surroundings as the primary venue for learning. In almost all cases, students in the schools using the environment-based model earned higher scores on standardized tests than their counterparts in more traditional settings.

EDUCATION AND THE ENVIRONMENT INITIATIVE

The State of California encourages teachers to use the environment as an integrating context for learning in all disciplines.



In October 2003, the Governor signed into law the Education and Environment Initiative (Pavley, Chapter 665, Statutes of 2003). This landmark law, now referred to as the Education and the Environment Initiative (EEI), further strengthened in 2005, provides a comprehensive framework for bringing environment-based education to students across California.



The major components of this “unified education strategy” include:

- Development of California’s first ever Environmental Principles and Concepts
- Design, development and dissemination of a standards-based model curriculum to teach the Environmental Principles and Concepts to students in kindergarten through 12th grade
- Incorporation of the Environmental Principles and Concepts into the State Board of Education’s criteria for adopting instructional materials for science, mathematics, English/language arts, and history/social sciences
- Reorientation of the state’s existing environmental education programs to support learning of the Environmental Principles and Concepts

The California Environmental Protection Agency and the California Integrated Waste Management Board are actively engaged in the implementation of the EEI. This important work is occurring in close collaboration with California’s State Board of Education, Department of Education, Office of the Secretary for Education, and the Resources Agency. The government agencies that are collaborating in the EEI have been joined by a broad-based group of partners from business and industry, educational institutions, non-governmental organizations, and professional organizations to ensure its successful implementation.

EDUCATION AND THE ENVIRONMENT INITIATIVE

PRINCIPLES & CONCEPTS

The Environmental Principles and Concepts examine the interactions and interdependence of human societies and natural systems.

principle **1** People Depend on Natural Systems

The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

As a basis for understanding this principle students need to know:

Concept a. That the goods produced by natural systems are essential to human life and to the functioning of our economies and cultures.

Concept b. That the ecosystem services provided by natural systems are essential to human life and to the functioning of our economies and cultures.

Concept c. That the quality, quantity and reliability of the goods and ecosystem services provided by natural systems are directly affected by the health of those systems.

principle **2** People Influence Natural Systems

The long-term functioning and health of terrestrial, freshwater, coastal and marine ecosystems are influenced by their relationships with human societies.

As a basis for understanding this principle students need to know:

Concept a. That direct and indirect changes to natural systems due to the growth of human populations and their consumption rates influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept b. That methods used to extract, harvest, transport and consume natural resources influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept c. That the expansion and operation of human communities influences the geographic extent, composition, biological diversity, and viability of natural systems.

Concept d. That the legal, economic and political systems that govern the use and management of natural systems directly influence the geographic extent, composition, biological diversity, and viability of natural systems.

EDUCATION AND THE ENVIRONMENT INITIATIVE

PRINCIPLES & CONCEPTS CONTINUED

principle **3** Natural Systems Change in Ways that People Benefit from and can Influence

Natural systems proceed through cycles that humans depend upon, benefit from and can alter.

As a basis for understanding this principle students need to know:

Concept a. That natural systems proceed through cycles and processes that are required for their functioning.

Concept b. That human practices depend upon and benefit from the cycles and processes that operate within natural systems.

Concept c. That human practices can alter the cycles and processes that operate within natural systems.

principle **4** There are no Permanent or Impermeable Boundaries that Prevent Matter from Flowing between Systems

The exchange of matter between natural systems and human societies affects the long-term functioning of both.

As a basis for understanding this principle students need to know:

Concept a. That the effects of human activities on natural systems are directly related to the quantities of resources consumed and to the quantity and characteristics of the resulting byproducts.

Concept b. That the byproducts of human activity are not readily prevented from entering natural systems and may be beneficial, neutral or detrimental in their effect.

Concept c. That the capacity of natural systems to adjust to human-caused alterations depends on the nature of the system as well as the scope, scale, and duration of the activity and the nature of its byproducts.

principle **5** Decisions Affecting Resources and Natural Systems are Complex and Involve Many Factors

Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

As a basis for understanding this principle students need to know:

Concept a. The spectrum of what is considered in making decisions about resources and natural systems and how those factors influence decisions.

Concept b. The process of making decisions about resources and natural systems, and how the assessment of social, economic, political, and environmental factors has changed over time.

WHAT IS SERVICE LEARNING ?



The term “service learning” first appeared in the 1970s although many educators have been combining education with volunteerism and service for years. It is entirely possible that you yourself have done service learning in your classroom or school community but never called it by name. Over the years, there are many definitions of service learning that have emerged. The Generation Earth program uses the following definition provided by The National Commission on Service Learning:

Service learning is a teaching and learning approach that integrates community service with academic study to enrich learning, teach civic responsibility and strengthen communities.

Service learning primarily uses the methods of “practice by doing” and “teaching others,” both of which yield the highest learning retention rates. By integrating what’s learned in the classroom with outside-the-classroom community experiences, students retain more. The “Learning Pyramid” developed by the NTL Institute of Alexandria, Virginia and pictured here, shows various curriculum teaching methods and the learning retention rates resulting from each method.

Avg.
Learning
Retention
Rates

LECTURE 5%

READING 10%

AUDIOVISUAL 20%

DEMONSTRATION 30%

DISCUSSION GROUP 50%

PRACTICE BY DOING 75%

TEACHING OTHERS 90%

ENVIRONMENTAL SERVICE LEARNING



Environmental service learning uses the environment as the integrating context for learning and service learning as the instructional strategy. It uses the environment as a theme to teach core curricular content areas including social studies, language arts, science, math, English, as well as electives. It can be implemented across all geographic and socioeconomic settings and is applicable to all students, regardless of their academic or developmental standing. Environmental service learning transforms the campus into a laboratory where students have the opportunity to take classroom awareness and put it into action. Not only does it increase students' understanding of local environmental issues, it gives them a sense of empowerment. Learning becomes more relevant by directly allowing students to exercise skills for real life situations. When they see for themselves the measurable improvement they have been able to make in their environment, "personal responsibility" and "civic engagement" take on new meaning. Youth become resources and change agents in their schools and communities.

SEVEN ELEMENTS OF SERVICE LEARNING



Ideally, when developing a service learning unit of study aligned to specific content standards, all of the following key elements should be included:

1 integrated learning and instruction

Environmental service learning supports the academic curriculum and vice versa.

- Provides students with opportunities to apply academic content to real-world, meaningful experiences.
- Supports the teaching of standards-based objectives to help students achieve academic success.

2 service to the community

Environmental service learning brings together students, teachers and community partners to provide meaningful service that meets community needs.

- Provides meaningful service activities that respond to a recognized community need.

3 student voice

Environmental service learning involves students in every aspect of the program.

- Involves students as partners in identifying community needs and issues, selecting, planning, evaluating, reflecting on their learning and service, and celebrating their successes.

4 collaboration

Environmental service learning incorporates many partners (stakeholders) into planning and implementation.

- Brings together students, teachers and community partners who can contribute to and benefit from the planning, implementation and evaluation of the environmental service learning project.

5 civic responsibility

Environmental service learning helps students recognize that they can have an effect on their community and learn that their voices and actions count.

- Involves students in identifying and mitigating their personal effects on their communities.
- Shows students that their voice and activities influence the functioning of their communities.

6 reflection and celebration

Environmental service learning helps students and teachers understand the significance of their projects and make connections with the academic curriculum.

- Provides students the opportunity to think about and communicate about implementing their environmental service learning project before, during, and after the project.
- Allows students and teachers to acknowledge and celebrate what they learned and how they feel about their environmental service learning projects.

7 evaluation

Environmental service learning involves students, teachers, administrators and community partners in measuring progress toward learning and service goals and uses that information to improve the program.

- Gives participating stakeholders an opportunity to identify changes that they might make to improve the program in order to increase the benefits to the community, quality of instruction, and level of student achievement.

EXPLORE SERVICE LEARNING PROGRAMS

Keeping in mind the Seven Elements of Service Learning, assess the following service learning examples, asking:

What elements are used? What elements are missing and how can they be incorporated?



EXAMPLE:

1. integrated learning and instruction
2. service to the community
3. student voice
4. collaboration
5. civic responsibility
6. reflection and celebration
7. evaluation

During her unit on plants, Ms. Templeton enlists her middle school science class to help a neighboring elementary school plant a garden in a vacant lot next to their school. She researches what seeds to plant and a local home improvement store donates them and provides ten volunteers for planting day. Once the garden is planted, Ms. Templeton invites city officials and local media to attend the dedication. Then, students write in their journals about their service learning experience. Teachers at the elementary school commit to maintaining the garden in the future.

WHAT ELEMENTS ARE USED?

Integrated Learning – the project directly correlates to Ms. Templeton’s unit on plants.

Service to the Community – by working with the elementary school to plant a garden in a vacant lot it not only serves the elementary school community, but the neighboring community as well.

Collaboration – the middle school and elementary school students have the opportunity to work together on the project as well as whatever community collaboration was necessary to get permission to work in the vacant lot and the involvement of the home improvement store.

Reflection – the students wrote in their journals about the project.

WHAT ELEMENTS ARE MISSING AND HOW CAN THEY BE INCORPORATED?

Student Voice – Ms. Templeton could have allowed her students and the elementary school students to take a more hands-on approach in planning the project.

Civic Responsibility – Ms. Templeton and her students could have explored the impact of a vacant lot in the neighborhood or the need of the elementary school for a garden, and how their service positively affects the community and the possible value of that service.

Evaluation – Ms. Templeton needs to implement a method of tracking the progress made for the learning goals of the project and include all the stakeholders in this process.

EXPLORE SERVICE LEARNING PROGRAMS

CONTINUED

1

Mrs. Henderson facilitates a discussion in her English classes on the community problem of illegal dumping. She invites a speaker from the Waste Management Board to talk to her students about the issue. Noting the trash and large items consistently left in their neighborhood, her students decide they want to increase awareness of the problem. They decide to create a pamphlet about illegal dumping. Then, Mr. Contreras, the Spanish teacher, has his students translate the pamphlets into Spanish. The project culminates with the students organizing a clean-up day on a neighborhood site where illegal dumping often occurs. During the cleaning, some of the students pair up and distribute their pamphlets to houses throughout the neighborhood.

What elements are used?

What elements are missing and how can they be incorporated?

2

Mr. Ramirez, the freshman health teacher at Mandalay High School, has his students do a waste audit of trash on their campus and write about how trash affects them, their community and the environment. They come up with a plan to reduce waste by starting a recycling program. Mr. Ramirez invites the city recycling coordinator to his classroom to speak and help set it up. To get the student body to buy into recycling, Ms. Jones' technology students create a three-minute video for all classes in the school to view. As a result of the project, the school is able to reduce its waste by 30%. Mr. Ramirez holds a roundtable discussion during which each student reflects on his or her participation in the project. Finally, students create a presentation to the city recycling coordinator and her colleagues that evaluates the strategies and goals of the project and how it can be improved upon in the future.

What elements are used?

What elements are missing and how can they be incorporated?

3

Ms. Taylor uses the environment as a central theme for a unit in her social studies classes. Her students research how different cultures dispose of their waste in varied ways. Then, students take a fieldtrip to a local landfill. Back at school, they watch a video on what happens to discarded e-waste in the U.S. and where it goes later. Ms. Taylor alerts her students to the problem of e-waste disposal on their own campus and assigns them the task of creating a resource directory outlining types of e-waste and the places that can

EXPLORE SERVICE LEARNING PROGRAMS

CONTINUED

collect, dispose of or recycle them in their area. She hangs the directories on the board for other classes to see and brings one to the school office for the staff's reference.

What elements are used?

What elements are missing and how can they be incorporated?

4

Students in Mr. Lee's chemistry class do a watershed audit on their campus and map their findings. Then, they take a rainy day hike and test the quality of the water they find in puddles and storm drains. His students decide to do a beach clean-up by staying right where they are and cleaning up their campus because runoff accumulated there will eventually flow to the ocean. They document their project from start to finish by taking photographs and creating a photo essay. When they're done, they present their photo essay, clean-up day and recommendation to plant a rain-capturing garden on campus to the school board. The board decides to organize a garden project on campus in response to the students' efforts. Board members call a local native plants expert who prepares the garden with soil and mulch, purchases the plants and completes the planting on a few consecutive Saturdays with the help of his friends and some local volunteers.

What elements are used?

What elements are missing and how can they be incorporated?

5

Ms. Cohen plans a beach clean-up day with her biology students. She calls a local environmental organization and sets up a fieldtrip. On fieldtrip day, she and her students arrive at the beach for a 30-minute lesson on the health of local beaches and the ocean from the organization's educator. Then, the students split into pairs armed with gloves and bags and spend two hours combing the beach for trash. At lunch on the sand afterwards, Ms. Cohen facilitates a discussion of what the students found and what daily actions they take that both help and harm the ocean. The educator who oversaw the fieldtrip gives each student a pamphlet about marine health and a small reusable water bottle to take back to school.

What elements are used?

What elements are missing and how can they be incorporated?

FREQUENTLY ASKED QUESTIONS ABOUT SERVICE LEARNING



Q & A

How is service learning different from community service or volunteer work?

Service learning differs from other forms of community service or volunteer work because the education of students is always at its core. Students are actively participating in the process of understanding, integrating and applying knowledge from various subject areas as they work to improve their communities. The question “Why am I learning this?” disappears as students help older people or register voters or work to restore a fragile ecosystem and see what they’ve learned in action.

How can I get my students interested in service learning?

An important aspect of service learning is student participation, not only in the actual activity, but also in the planning and suggestion phase. When students have a voice in choosing and designing a service project, they are intrinsically more invested emotionally and intellectually. Since projects often utilize student strengths and talents that aren’t always apparent in day-to-day lessons, service learning can motivate students to impressive accomplishments both in and out of the classroom. From the primary grades through high school, teachers use this method to do more than meet educational needs and fulfill academic standards, but also as a way to excite students and build on their skills and talents.

Won’t service learning just mean more work for me?

Initially, as you’re learning to use service learning as a teaching method and finding ways to integrate it into your curriculum, you may find that it takes a little more time than regular lesson or activity planning. However, as you become more adept and comfortable with the practice, you’ll start to see curricular connections and the possibilities for projects and community partnerships much more easily. More than likely, you’ll also find that your own levels of engagement and enthusiasm reflect that of the young people you work with and guide through service learning. The academic results and accomplishments in the community reward the effort for everyone involved.

Excerpted from *The Complete Guide to Service Learning: Proven, Practical Ways to Engage Students in Civic Responsibility, Academic Curriculum & Social Action* by Cathryn Berger Kaye, M.A. © 2004. Used with permission of Free Spirit Publishing Inc., Minneapolis, MN; 1-866-703-7322; www.freespirit.com. All rights reserved.

FREQUENTLY ASKED QUESTIONS ABOUT SERVICE LEARNING

CONTINUED

Q & A

How can I fit service learning into my curriculum when I already have so much to teach?

One of the best things about service learning is that you can specifically design it to fit into your classroom and/or community situation. Your project can be a one-day, stand alone project or a longer project that is ongoing or culminates on a specific day (e.g. Earth Day, Cesar Chavez Day). If you are new to service learning, start with a project that you have already done in the past and modify it to make it service learning or start with something simple within your own classroom before taking it out into the community.

Does service learning really work? What does service learning research say?

Service learning research has shown a positive impact on participating students in four areas:

- Academic or cognitive domains: what students were learning in terms of content or higher order thinking skills as a result of their participation
- Civic domains: connection to society and community
- Personal/social domains: personal and interpersonal development in areas such as youth empowerment, respect for diversity, self confidence and avoidance of risk behaviors
- Career exploration skills: knowledge of career pathways and workplace literacy

Many studies found that the quality of service learning matters in terms of the relative impact of service learning. Early results appear to indicate that linkage with the standards, intention design and clarity of goals, and direct contact with the community are the strongest predictors of impact on students. (Billig, RMC Research Corporation, Denver)

How can I get my administration to support service learning?

Start by making sure your administrative team understands service learning and how it supports standards-based learning and enhances classroom activities. Assure them that service learning doesn't take away from the curriculum, but makes it much more meaningful for the students. Provide them materials and resources on service learning. Have your students give updates on the project so they can see service learning in action as well as be kept informed on the progress of the project. Keep the dialogue going!

CREATING A GENERATION EARTH ENVIRONMENTAL SERVICE LEARNING PROGRAM



To assist you in creating a standards-based service learning unit of study we have prepared the following:

- **GENERATION EARTH PROGRAM PATHWAY** – Steps to a successful program.
- **GENERATION EARTH LESSON PLAN BUILDER** – Template to create a unit of study.

The Program Pathway was developed to outline our suggested step-by-step process for a successful service learning program. As part of the process, the Lesson Plan Builder is provided with specific questions that lead to the creation of a unit that follows the suggested pathway. A filled-out sample is included. Please feel free to modify the Pathway or the Lesson Plan Builder to meet your classroom needs and resources.

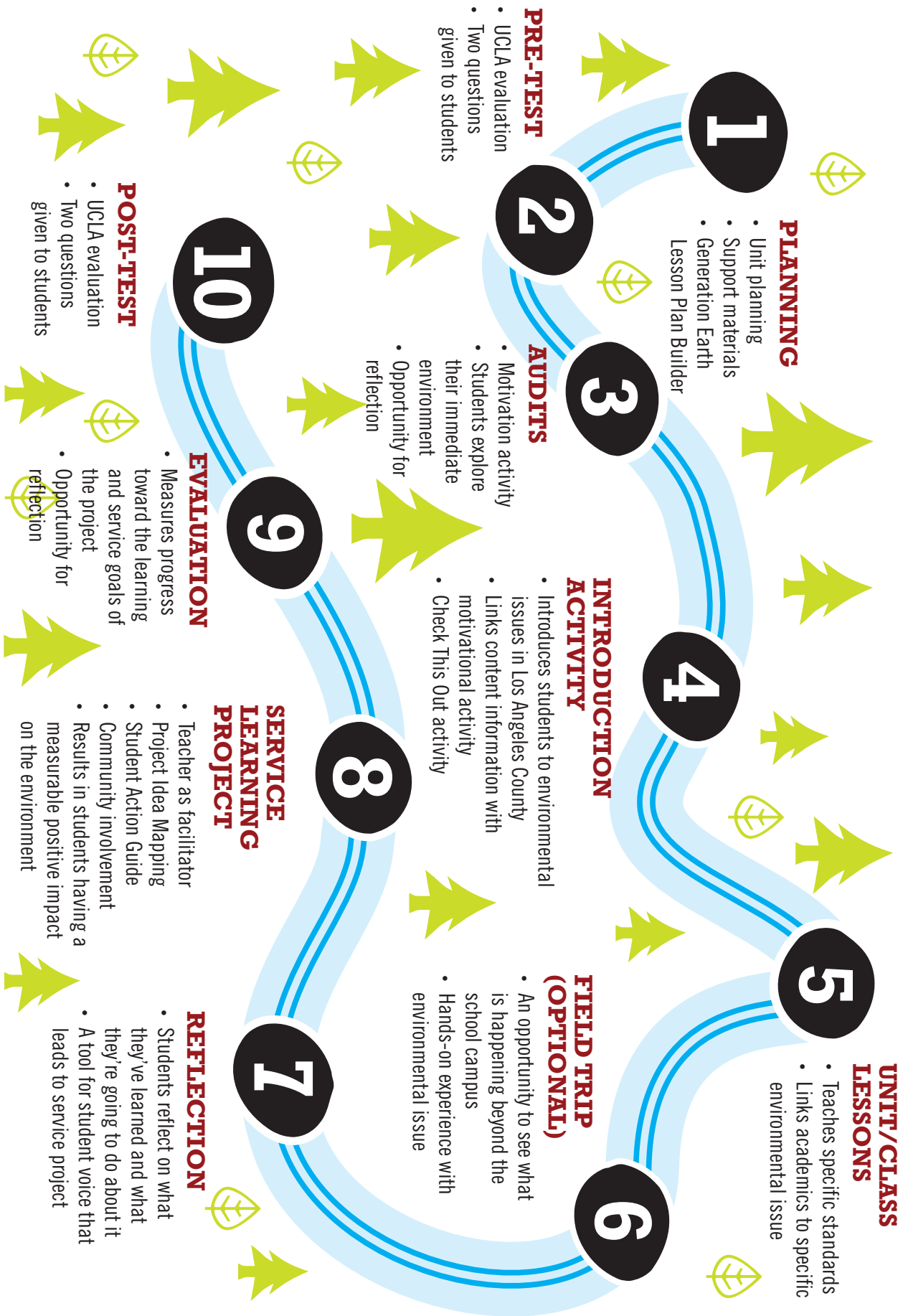
GENERATION EARTH PROGRAM PATHWAY

Steps to a successful Generation Earth program.



- 1 Planning** Planning involves using either the Generation Earth Lesson Plan Builder or your own, to create a unit of study. Whichever instructional strategy for an environmental service learning program you choose, it will be meaningful to your students, your instructional goals, and the community.
- 2 Pre-Test** A simple, 2-question pretest is provided to gauge what related environmental actions students are already doing and their attitude about them.
- 3 Campus/Community Audit** To get students actively involved and immediately introduced to the issue, have them conduct an audit on campus or in their community. Depending on your environmental focus, students can collect base-line data to begin to develop ideas about what is going on in their environment. For example: a waste audit at the school measures the amount of recyclables left in trash cans; or a water audit at school maps where water is going and where harmful trash/pollution is left on the ground and carried by water into the storm drain system. After the audit is complete students may reflect on their findings.
- 4 Introduction Activity** The introductory lesson provided by Generation Earth is designed to introduce environmental subject matter to the students. Current environmental issues within Los Angeles County are explored and allow students to reflect on what they have learned and compare it to the audit information they gathered.
- 5 Unit/Class Lessons** This step involves continuing with additional lessons that support content knowledge, textbook information and whatever else is needed to drive content standards.
- 6 Field Trip** A field trip is encouraged to help students build on their knowledge by seeing the impact of environmental issues beyond their campus. Buses are available through the Generation Earth program.
- 7 Reflection** Once lessons are complete students think about what they have learned, brainstorm their ideas for improving the school or community, and anticipate the significance of their environmental service learning project.
- 8 Service Learning Project** A project idea mapping activity is provided to assist students in developing their project. Also included are Student Action Guides – one for the Project Manager and one for each of the other students. These guides serve to help each student manage their individual tasks and keep track of their progress.
- 9 Evaluation** As the final step of their project, students evaluate what worked, didn't work and whether their goals for the project were obtained. Now, students may reflect on their service learning experience by thinking about communicating and celebrating its effect on them, their community, and their environment.
- 10 Post-Test** The simple, two-question test is given again to measure any changes in environmental actions students are doing and their attitude about them.

PROGRAM PATHWAY



GENERATION EARTH LESSON PLAN BUILDER

Use the Generation Earth Lesson Plan Builder to guide you step-by-step in the creation of your environment service-learning program. Designed following the Program Pathway, it not only includes the elements necessary to create a lesson plan that meets California Standards, but also includes those needed for a well-rounded environmental service learning program:

Completed lesson plan will be used to share with other teachers as a way to support and share ideas.

The following headings are part of the Generation Earth Lesson Plan Builder:

1 step one

PLANNING: Fill out the following as the foundation for planning your service learning unit of study:

- **Lesson/Unit Title:** Use a name for your lesson or unit that describes what the lesson is about.
- **Subject:** Give the name of your class.
- **Instructional Level:** Give the grade and ability (grade level, advanced placement, honors, special education, etc.) of the students.
- **Description - Overview of unit:** Write a brief description of the lesson/unit.
- **Developed by:** Give your name.
- **Timeline:** Time allotted to accomplish the unit.
- **Standards to be Achieved:** These are the specific standards to be taught.
- **Objectives:** What students will be able to do related to the standards – the outcome of your activities. Be clear and specific. Your objectives should be measurable.
- **Environmental Topic/Issue:** This is the environmental focus of the unit. Choose a general environmental topic/issue that is relevant to your area, such as storm water runoff, waste reduction, illegal dumping, etc.
- **Resources:** Equipment and materials needed.
- **Approved State Textbook:** Give the name of the textbook to be used. List chapter, pages, and any notes.
- **Supplemental Resources:** Additional curriculum to support the unit, including the name of the resource, and any notes.

2 step two

PRE-TEST: Use the two-question Generation Earth evaluation tool to establish a baseline for student involvement in environmental actions.

3 step three

MOTIVATION ACTIVITY/AUDITS: A lesson that has students looking at what is happening around them. An audit tool is suggested for this activity.

GENERATION EARTH LESSON PLAN BUILDER

CONTINUED

4 step four

INTRODUCTION ACTIVITY: A lesson that introduces students to a local environmental issue and the subject content. The Generation Earth *Check This Out* Introductory Lesson is suggested for this activity.

5 step five

UNIT/CLASS LESSONS: Write up lessons that teach the content standards and link the local issue. List the duration and skills needed, including activity details.

6 step six

FIELD TRIP (OPTIONAL): Include any ideas for possible field trips that would enhance student learning and understanding of the learning content and environmental issue. List any possible guest speakers.

7 step seven

REFLECTION: An activity that shares with others what students have learned and gives ideas that lead to a service project. Include the duration and activity details.

8 step eight

SERVICE LEARNING PROJECT: An activity that supports student voice in developing and carrying out a service learning project that addresses the environmental issue and benefits the community. The Generation Earth *Service Project Idea Mapping* is suggested for this activity.

9 step nine

EVALUATION: The activity that assesses how well students achieved lesson goals and objectives. List the objective, duration and method of evaluation. Repeat as necessary depending on the number of objectives. An additional activity is suggested for evaluating what was learned during the service project and generating ideas for improvement.

10 step ten

POST-TEST: Use the two-question Generation Earth evaluation tool as a final assessment of student involvement in environmental actions.

GENERATION EARTH

LESSON PLAN BUILDER FORM

1

step one

PLANNING (The foundation of planning your service learning unit of study)

LESSON/UNIT TITLE _____ **SUBJECT** _____

INSTRUCTIONAL LEVEL Grade _____ Ability _____

DESCRIPTION (Overview of unit)

DEVELOPED BY _____ **TIMELINE** _____
(Name of educator(s)) (Time allotted to accomplish the unit)

STANDARDS TO BE ACHIEVED

OBJECTIVES (What students will be able to do related to the standards)

ENVIRONMENTAL ISSUE/TOPIC (The environmental focus – storm water runoff, waste reduction, etc.)

GENERATION EARTH

LESSON PLAN BUILDER FORM

RESOURCES (Equipment and materials needed)

ITEM:	HOW USED:	ITEM:	HOW USED:
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APPROVED STATE TEXTBOOK (Name of textbook)

CHAPTER/PAGES:	NOTES:	CHAPTER/PAGES:	NOTES:
----------------	--------	----------------	--------

SUPPLEMENTAL RESOURCES (Additional curriculum to support the unit)

RESOURCES:	NOTES:
------------	--------

2

step two

PRE-TEST (The Generation Earth Student Assessment)

DURATION

ACTIVITY DETAILS

GENERATION EARTH

LESSON PLAN BUILDER FORM

3

step three

MOTIVATION ACTIVITY/AUDIT (Lesson that has students look at what is happening around them)

AUDIT TOOL

DURATION

ACTIVITY DETAILS

METHOD FOR REFLECTION ON AUDIT

4

step four

INTRODUCTION ACTIVITY (Lesson that introduces students to local environmental issue and lesson content)

DURATION

ACTIVITY DETAILS

5

step five

UNIT/CLASS LESSONS (Teacher-centered activities that teach the content standards)

DURATION

SKILLS ☐ LISTEN ☐ READ ☐ SPEAK ☐ WRITE ☐ COMPUTE ☐ THINK CRITICALLY ☐ OTHER

ACTIVITY DETAILS (Repeat as needed for each Step 5 lesson)

6

step six

FIELD TRIP (Field trip and/or guest speaker to enhance student learning)

FIELD TRIP LOCATION

CONTACT

GUEST SPEAKER

CONTACT INFORMATION

GENERATION EARTH

LESSON PLAN BUILDER FORM

7

step seven

REFLECTION (Activity that inspires a youth-driven service project)

DURATION

ACTIVITY DETAILS

8

step eight

SERVICE LEARNING PROJECT (Activity that supports student voice in developing and carrying out a service learning project)

DURATION

ACTIVITY DETAILS

9

step nine

EVALUATION (Activities that assess how well students achieved lesson objectives and the service project)

Content Standards (Repeat as necessary depending on the objectives)

DURATION

OBJECTIVE

METHOD ☐ WRITTEN ESSAY ☐ ORAL QUIZ ☐ OBSERVATION ☐ WRITTEN QUIZ ☐ ROLE PLAY ☐ PROJECT
☐ DEMONSTRATION ☐ SURVEY ☐ CHECKLIST ☐ JOURNAL ENTRY

ACTIVITY DETAILS

Service Project

DURATION

ACTIVITY DETAILS

GENERATION EARTH

LESSON PLAN BUILDER FORM

10 step ten

POST-TEST (The Generation Earth student assessment)

DURATION

ACTIVITY DETAILS

GENERATION EARTH

LESSON PLAN BUILDER FORM FILLED-OUT SAMPLE

1

step one

PLANNING (The foundation of planning your service learning unit of study)

LESSON/UNIT TITLE Water Quality in Our Community **SUBJECT** Life Science

INSTRUCTIONAL LEVEL Grade 6 Ability Standard

DESCRIPTION (Overview of unit)

Students will complete a water audit at school to gather data about what is happening at their school. The introduction lesson will link their data to the local issue of stormwater runoff. Lessons will continue to build on the effect of water pollution on our watershed, and biotic and abiotic factors in freshwater biomes. A field trip to local waterway to test the quality of water will provide data for analyzing. Students will make conclusions about what they have learned and demonstrate their learning by illustrating a freshwater biome and writing information about the influence of stormwater runoff. Finally, students will write an article to share with others what they have learned. Students will take their ideas and use the Generation Earth Project Pathway to develop a community project to improve water quality.

DEVELOPED BY Maria Sanchez **TIMELINE** 4 weeks
(Name of educator(s)) (Time allotted to accomplish the unit)

STANDARDS TO BE ACHIEVED Life Science 5c, d, e

OBJECTIVES (What students will be able to do related to the standards)

Students will be able to:

- 1. Give examples of a producer, consumer and decomposer within an ecosystem.*
- 2. Identify the effects of human practices on an ecosystem.*
- 3. Identify abiotic factors that affect freshwater biomes.*
- 4. Classify components as either biotic or abiotic.*
- 5. Explain the effects of changing biotic/abiotic factors on an ecosystem.*
- 6. Provide examples of how human practices affect biotic/abiotic components.*

ENVIRONMENTAL ISSUE/TOPIC (The environmental focus – storm water runoff, waste reduction, etc.)

Water quality/storm runoff

GENERATION EARTH

LESSON PLAN BUILDER FORM

FILLED-OUT SAMPLE CONTINUED

RESOURCES (Equipment and materials needed)

ITEM:	HOW USED:	ITEM:	HOW USED:
<i>Generation Earth Water Audit</i>	<i>Step 3</i>	<i>GE Project Idea Mapping</i>	<i>Step 8</i>
<i>Poster paper and markers</i>	<i>Step 4 and 8</i>	<i>Student Action Guide</i>	<i>Step 8</i>
<i>Map of school</i>	<i>Step 3</i>		
<i>Check This Out Cards</i>	<i>Step 4</i>		

APPROVED STATE TEXTBOOK (Name of textbook) *Prentice Hall*

CHAPTER/PAGES:	NOTES:	CHAPTER/PAGES:	NOTES:
<i>Chapter 10, page 295</i>	<i>Runoff</i>		
<i>Chapter 18</i>	<i>Living things</i>		
<i>Chapter 19</i>	<i>Freshwater biomes</i>		

SUPPLEMENTAL RESOURCES (Additional curriculum to support the unit)

RESOURCES:	NOTES:
<i>www.waterlessons.org</i>	<i>Use 6th grade student information sheets</i>
<i>Water Quality Service Learning Program</i>	<i>and Part 2, 6, and 7 lesson plans</i>

2

step two

PRE-TEST (The Generation Earth Student assessment)

DURATION	<i>15 minutes</i>
ACTIVITY DETAILS	<i>Take at the beginning of the unit.</i>

GENERATION EARTH

LESSON PLAN BUILDER FORM

FILLED-OUT SAMPLE CONTINUED

3

step three

MOTIVATION ACTIVITY/AUDIT (Lesson that has students look at what is happening around them)

AUDIT TOOL *Generation Earth Water Audit*

DURATION *2 class sessions - 40 minutes each*

ACTIVITY DETAILS *1. Students map out where on the campus water comes from, goes, gets into the ground and where there are trash and other harmful substances. 2. Students put maps together and analyze the results.*

METHOD FOR REFLECTION ON AUDIT *Small group discussion asking, "What did we observe?" "What impact does this have on us?" "What impact do we have on what we found?"*

4

step four

INTRODUCTION ACTIVITY (Lesson that introduces students to local environmental issue and lesson content)

DURATION *1 class session - 45 minutes*

ACTIVITY DETAILS *Read Information Sheet A from Water Quality Service Learning Program and discuss how this information relates to what they found on campus.*

5

step five

UNIT/CLASS LESSONS (Teacher-centered activities that teach the content standards)

DURATION *4 class sessions*

SKILLS ☒ LISTEN ☒ READ ☐ SPEAK ☒ WRITE ☒ COMPUTE ☒ THINK CRITICALLY ☐ OTHER

ACTIVITY DETAILS (Repeat as needed for each Step 5 lesson) *1. Textbook reading - Chapter 18; Read Information Sheet B from WQSLP and conduct the discussion and guided questions. 2. Chart and plot water quality results. 3. Textbook reading - Chapter 19; Read Information Sheet C from WQSLP and conduct the discussion and guided questions.*

6

step six

FIELD TRIP (Field trip and/or guest speaker to enhance student learning)

FIELD TRIP LOCATION *Los Angeles River site to see/audit amount of trash found*

CONTACT *FOLAR: (323) 223-0585*

GUEST SPEAKER *Speaker from local Water Resources Control Board*

CONTACT INFORMATION *(213) 576-6600*

GENERATION EARTH

LESSON PLAN BUILDER FORM FILLED-OUT SAMPLE CONTINUED

7 step seven

REFLECTION (Activity that inspires a youth-driven service project)

DURATION *1 class lesson - 45 minutes*

ACTIVITY DETAILS *Students write an article describing what they learned about water quality in their community and what they think can be done about it.*

8 step eight

SERVICE LEARNING (Activity that guides students to map out ideas for a service project that addresses the environmental issue and benefits the community)

DURATION *Approximately 4 class sessions depending on the project chosen.*

ACTIVITY DETAILS *Use the Generation Earth Service Project Idea Mapping Activity to guide students to a project plan. Have students use the Student Action Guides to manage their tasks.*

9 step nine

EVALUATION (Activities that assess how well students achieved lesson objectives and the service project)

Content Standards (Repeat as necessary depending on the objectives)

DURATION *1 class session - 45 minutes*

- OBJECTIVE
- 1. Give examples of a producer, consumer and decomposer within an ecosystem.*
 - 2. Identify the effects of human practices on an ecosystem.*
 - 3. Identify abiotic factors that affect freshwater biomes.*
 - 4. Classify components as either biotic or abiotic.*
 - 5. Explain the effects of changing biotic/abiotic factors on an ecosystem.*
 - 6. Provide examples of how human practices affect biotic/abiotic components.*

METHOD ☒ WRITTEN ESSAY ☐ ORAL QUIZ ☐ OBSERVATION ☐ WRITTEN QUIZ ☐ ROLE PLAY ☐ PROJECT
☒ DEMONSTRATION ☐ SURVEY ☐ CHECKLIST ☐ JOURNAL ENTRY

ACTIVITY DETAILS *Following the Water Quality Service Learning Program Part 6, have students illustrate a freshwater ecosystem or biome with biotic and abiotic factors, and label the producers, consumers and decomposers. Have students include one kind of land pollution as part of their diagram and describe how it will affect the abiotic factors and the consequences to organisms.*

Service Project

DURATION *15 minutes*

ACTIVITY DETAILS *Answer the evaluation questions listed in the back of the Student Action Guides.*

GENERATION EARTH

LESSON PLAN BUILDER FORM

FILLED-OUT SAMPLE CONTINUED

10 step ten

POST-TEST (The Generation Earth student assessment)

DURATION *15 minutes*

ACTIVITY DETAILS *Take at the end of the unit.*

INCORPORATING REFLECTION



Reflection – the process of deriving meaning and knowledge from the service learning experience, which can occur throughout the instructional unit of study.

WHY REFLECT?

- We learn from thinking about what we do
- Reflecting gives meaning to a service experience
- It enhances critical thinking skills
- It connects service to classroom material, ethics, the community, civic responsibility, and students' futures

INCORPORATING REFLECTION INTO THE GENERATION EARTH SERVICE LEARNING PROGRAM

The following steps in the Program Pathway are natural opportunities to incorporate reflection.

3 step three

AUDIT: After conducting an audit, students reflect on what they observed as well as the impact they have on their community and how their community's environmental issue impacts them. This reflection also serves to provide a personal context for their classroom learning.

7 step seven

REFLECTION: Before starting a project, students reflect on what they have learned so far as well as actions that they can take. It is this reflection that leads to the Service Project Idea Mapping activity.

9 step nine

EVALUATION: After evaluating the goals and objectives of their project, students can reflect on the impact of their project on themselves, their community, and the environment.

EXAMPLES OF REFLECTION ACTIVITIES

- Create a website
- Write open-ended journal or guided journal entries
- Give a public presentation to community partners, peers, administration, and/or community
- Have a class or small group discussion
- Write an article in the school or community newspaper
- Create a photo or video essay
- Write a poem or other creative project
- Read a book/story that relates to the project
- Conduct an interview
- Create visual art or mural
- Write and/or perform a drama/play
- Plan a project
- Tell a story

PROGRAM SUPPORT MATERIAL



To support your standards-based service learning unit of study we have provided the following:

- **ENVIRONMENTAL AUDIT ACTIVITY** – Guidelines for conducting an environmental audit.
- **CHECK THIS OUT** – An introduction to environmental issues activity.
- **PROJECT IDEA MAPPING** – A step-by-step activity to choose a service project.
- **STUDENT ACTION GUIDE** – Individual guides for students to assist with project management, including one for the project manager are available.

Teacher guidelines are provided for conducting these suggested Generation Earth activities. An overview, time, materials, and procedures are included.



ENVIRONMENTAL AUDIT ACTIVITY

TIME  1 – 2 CLASSROOM PERIODS

OVERVIEW

Student teams are given instructions for conducting an environmental audit. Students make observations and indicate their findings on an instruction sheet and/or map of the campus. After presenting their findings to the class, students reflect on what they found.



materials

Depends on the audit used.

procedure

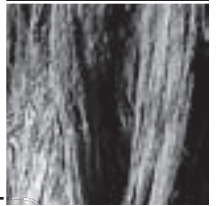
1. Discuss with students a local environmental issue and ask:
 - What do we know about the issue?
 - What don't we know about the issue?
2. Explain to the students that they will investigate their campus and answer questions along the way.
3. Divide the students into workgroups.
4. Pass out materials as needed per the audit being used.
5. Familiarize students with the area they are observing and any skills they need.
6. Go through the audit information and demonstrate what the student groups will be looking for and how to mark their worksheet.
7. Give groups a deadline before sending them to their different areas to do the audit.
8. When students return to the classroom, have each group report on their findings using the answers on their worksheet.
9. Use the following guided questions to discuss what was found:
 - What did you learn as a result of your observations?
 - What is one question you have about what you observed?

reflection

1. Have students use any method of reflection to express:
 - What impact do I have on the environmental issue?
 - What impact does the environmental issue have on me?



TEACHER GUIDELINES





CHECK THIS OUT ACTIVITY

TIME  2 CLASSROOM PERIODS

OVERVIEW

In working groups, students explore one topic area related to resource use and the production of waste. Groups are then split up forming new teams, each with information about the different topic areas. These new teams answer one of two questions and illustrate it using poster or dry erase board. After group presentations, students answer guided questions that link what they have learned to the audit or other motivational activity used.



materials

- ☐ Topic Card and the five related Check This Out cards – 1 topic per group
- ☐ 6 poster or dry erase boards – 1 per group
- ☐ Markers – 1 set per group

procedure

1. Divide students into six working groups. Groups should be as close to equal in size as possible.
2. Explain the following to the groups:
 - a. Each group will learn and discuss a different topic of resource and waste management – paper and paper products; plastics and packaging; composting; household hazardous wastes; illegal dumping; or storm drain pollution.
 - b. Each group will receive one Topic Card and the five related Check This Out cards.
 - c. Pass out a Check This Out card to each member of your group.
 - d. Follow the instructions on your group's Topic Card introducing the subject and asking questions for your group to answer.
 - e. You will have 15 minutes to share the information and become experts on the topic.
 - f. One member from each group will then form a new team. These new teams will answer one of two questions and illustrate the answers on poster or dry erase board.
 - g. You will have 15 minutes to create your presentations.
 - h. Each team will have 3 minutes to present its answers to the class.

TEACHER GUIDELINES



CHECK THIS OUT ACTIVITY CONTINUED

TEACHER GUIDELINES

3. Pass out one set of cards containing one Topic Card and the five related Check This Out cards to each group.
 - a. Within each group, divide up the Check This Out cards so that each person has a card. If necessary, share or double up cards to ensure that every card is used.
 - b. Have each person read their Check This Out card.
 - c. Have one person in the group read the introduction on the Topic Card. Then, read and answer the questions.
 - d. Discuss the answers and become experts on the topic.
4. Give a 5-minute warning to the groups.
5. Divide groups into new teams. Each team should include one person from each of the topic groups.
6. Using poster or dry erase board, have each team answer and illustrate one of the following questions:
 - a. Give three examples of ways that waste on land might get into the ocean and affect the ocean environment and what you can do about it.
 - b. Give three examples of how consumers create waste that ends up on the ground or in the landfill and what you can do about it.
7. Give a 5-minute warning to the teams.
8. Have each team present their answers to the class.
9. Have students discuss what they learned during the activity and how it relates to what they observed during their audit or other observation activity.



GENERATION EARTH TOPIC CARD: PILES OF PAPER

1



READ THIS AS A GROUP

Score! Two points! You're doing your homework and make a mistake in the first paragraph. So, you crumple the piece of paper and toss it in the trash. Did you think about the tree that the paper came from? Trees are harvested and sent to mills and processed into lumber. The wood waste is sent on to paper mills, where it is manufactured into lunch bags, notebooks, computer paper, magazines, napkins, towels, and the list goes on and on.

2

Each person reads his/her Check This Out card and takes notes (you will need them later!)

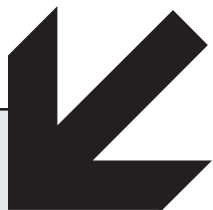
3

As a group, answer the following questions. Hint: Each team member has different information that will help.

think about it!

1. A California law required each city and county in California to divert 50% of its solid waste from landfills and waste-to-energy facilities by the year 2000 through source reduction, recycling and composting. Most cities did not meet this goal and filed for extensions. Why is this goal important to us as students? Give at least three reasons.
2. What's the difference between reducing, reusing and recycling our wastes? Of the three actions, which do you think is most important? Why?
3. How does buying supplies for taking notes in class, doing homework or even bringing lunch to school relate to paper and waste disposal issues?
4. What can we do to encourage manufacturers to reduce the number of trees cut down to make paper and paper products?
5. How can we encourage our classmates, friends, and family to help decrease the number of trees cut down to make paper and paper products?

STUDENT PAGE



PILES OF PAPER

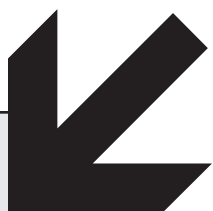
1



CHECK THIS OUT

- California generates about 14 million tons of paper a year. Of this, about 31% is recovered for recycling each year. That leaves about 9.5 million tons of paper products being disposed of in landfills each year in California. Remember this is tons!
- About 64% of all paper produced goes to landfills, yet all forms of paper (except those contaminated with food waste) are easily recycled.
- Each year, the average student produces about 112 lbs. of paper waste that ends up in landfills.
- Paper products make up about 47% of the total waste being produced at schools in Los Angeles County.

STUDENT PAGE



PILES OF PAPER

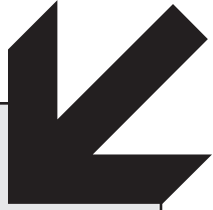
2



CHECK THIS OUT

- It takes 17 trees to make one ton of paper. About 70 million tons of raw paper are manufactured in the United States each year. (That's about 1.2 billion trees used annually in the U.S. alone.)
- Recycling all the newspapers for one Sunday would save an estimated 550,000 trees.
- Paper made from waste paper is called "post-consumer" recycled paper because it has been used and recycled instead of being added to a landfill.
- "Pre-consumer" recycled paper is made from wood and paper scraps that have never been manufactured into other products (like the cut off corners of envelope flaps).

STUDENT PAGE



PILES OF PAPER

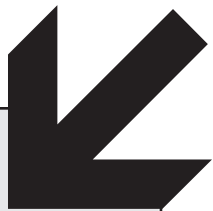
3



CHECK THIS OUT

- “Reduce, reuse, recycle” describes three ways to conserve natural resources and prevent trash in landfills. All three options help the environment, however reducing is the most effective method because it prevents waste in the first place.
- Reducing resources means buying less. Then there isn’t any waste to deal with. Using email instead of sending letters is an example of reducing waste.
- Using both sides of a sheet of paper or tailoring clothes in your closet instead of buying new ones are examples of reusing resources.
- Recycling breaks down products like newspapers, telephone books and computer paper into products that can be used again, like computer paper into school notebooks. Collecting paper products for recycling is the first step in this process. The last step is to purchase products made from recovered products.

STUDENT PAGE



PILES OF PAPER

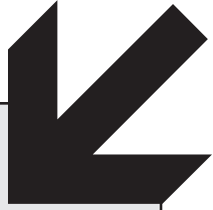
4



CHECK THIS OUT

- Making paper from raw materials (trees) requires large amounts of water and energy. Paper manufacturing uses more oil than any other U.S. industry and is the third largest industrial user of electricity and coal.
- Most paper manufacturing uses chlorine bleaches and other chemicals linked to serious health problems. If not properly treated, these toxins may be released through waste water from paper plants into streams, rivers and the atmosphere.
- According to one estimate, when new paper is made from discarded paper instead of trees, 60% less water and 70% less energy are used, and the pollutants added to the environment are cut in half.

STUDENT PAGE



PILES OF PAPER

5



CHECK THIS OUT

- People often use paper and paper products for convenience rather than out of necessity. Putting groceries into a paper bag instead of a canvas one, cleaning with a paper towel instead of a rag, and using paper rather than cloth napkins are examples of this. Paper plates and straw covers are other examples of one-time use convenience items.
- Many manufacturers unnecessarily use excessive paper and cardboard to package a product. Buying in bulk eliminates some packaging waste.
- Paper and paperboard products make up the largest portion of municipal solid waste in the U.S.

STUDENT PAGE



THE PROBLEM WITH PLASTIC

1



READ THIS AS A GROUP

When your grandparents, and maybe even your parents, were growing up, plastics weren't a big part of their lives. Today, plastics are used for everything from milk jugs and soda bottles to bicycle helmets and auto parts.

2

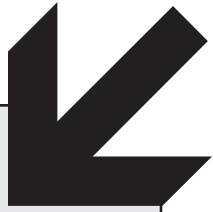
Each person reads his/her Check This Out card and takes notes (you will need them later!)

3

As a group, answer the following questions. Hint: Each team member has different information that will help.

think about it!

1. A California law required each city and county in California to divert 50% of its solid waste from landfills and waste-to-energy facilities by the year 2000 through source reduction, recycling and composting. Most cities did not meet this goal and filed for extensions. Why is this goal important to us as students? Give at least three reasons.
2. What's the difference between reducing, reusing and recycling our wastes? Of the three actions, which do you think is most important? Why?
3. How does buying items, such as individually wrapped bags of chips, relate to plastics and packaging disposal issues?
4. What can we do to encourage manufacturers to reduce the oil used for packaging and other one-time uses of plastics?
5. How can we encourage our classmates and others at school and in our community to help reduce the oil used for packaging and other one-time use plastic products?



THE PROBLEM WITH PLASTIC

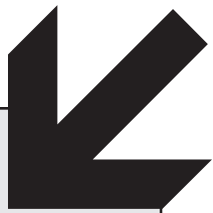
1



CHECK THIS OUT

- Plastics are made from oil, a non-renewable natural resource limited in supply.
- Manufacturing plastic requires large quantities of water and energy resources. Plastic manufacturing also produces harmful chemicals that if not properly treated may pollute our water and air systems.
- Plastic packaging is often found as litter on the streets and in the ocean. Marine animals sometimes mistake six-pack rings, plastic bags and other plastic items floating in the ocean as food. In the central North Pacific Ocean, there are six pounds of plastic for every pound of zooplankton.
- Some plastics are bulky and hold their shape and are therefore hard to compact for proper disposal in landfills. Some studies estimate that plastics take up 32% of landfill space.

STUDENT PAGE



THE PROBLEM WITH PLASTIC

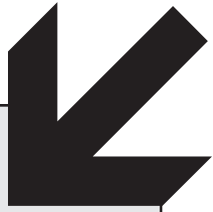
2



CHECK THIS OUT

- The packaging industry is the biggest user of plastics. Because plastics are lightweight, long-lasting, waterproof, see-through and easily made into almost any shape, they are cost-effective and useful for packaging.
- Manufacturers use excessive packaging to appeal to customers.
- Plastics are designed to last a long time, yet are often only used in packaging that is thrown away.
- Each year, the average student produces about 29 lbs. of plastic waste that ends up in landfills. Less than 5% of plastic ever gets recycled.

STUDENT PAGE



THE PROBLEM WITH PLASTIC

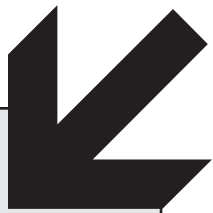
3



CHECK THIS OUT

- Plastics do not easily decompose. Even those designed to degrade only break down into smaller pieces rather than entirely decomposing. These plastics break down only when exposed to sunlight; therefore, they generally do not decompose when disposed of in landfills.
- An alternative to throwing plastic in the trash is to recycle it for money. In many states, including California, a law requires a small deposit on PET (polyethylene terephthalate) bottle purchases. The state refunds your deposit when you return the bottle for recycling.
- Recycled plastic can be used to make products as varied as benches, clothing, and bags. Although legal elsewhere in the world, making food containers out of recycled plastic is not legal in the United States.

STUDENT PAGE



THE PROBLEM WITH PLASTIC

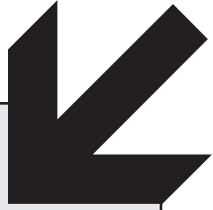
4



CHECK THIS OUT

- Many products contain more than one type of plastic, each providing a different characteristic. Combining plastics can make a product almost impossible to recycle since different plastics require different recycling processes.
- The plastics industry has a coding system to help people and industries recycle plastic. These codes are found on the bottom of many plastic packages, imprinted inside a small recycling symbol. Items coded with a 1 or 2 are commonly easy to recycle. These plastics are turned into carpets, clothing, non-food containers, motor oil or detergent bottles, pipes, pails and other new products.
- It is hard to find markets for recycled items marked with codes 3, 4, 5, 6 or 7. Without a source to sell these recycled plastics to, recyclers put less emphasis on these materials. New markets for these plastics are currently being created in the U.S. and other countries.

STUDENT PAGE



CHECK THIS OUT

THE PROBLEM WITH PLASTIC

5



- “Reduce, reuse, recycle” describes three ways to conserve natural resources and prevent trash in landfills and the ocean. All three options help the environment, however reducing is the most effective method because it prevents waste in the first place.
- Reducing resources means buying less. Then there isn’t any waste to deal with. Not buying individually packaged foods and avoiding plastic wrap are ways to reduce plastic waste.
- Drinking from a reusable commuter mug or bringing lunch to school in a lunch box are examples of reusing resources.
- Recycling breaks down plastic products like water bottles and food containers into other things that can be used again, like bottles into cloth shopping bags. By collecting these products for recycling and then buying new products made from recycled goods, we are fully participating in the recycling process.

STUDENT PAGE



GENERATION EARTH TOPIC CARD: THE ROTTEN TRUTH

1



READ THIS AS A GROUP

If you were to look into the school dumpster after lunch one day, you'd find plenty of food literally going to waste. When it comes to composting, that garbage is gold! Many food and yard wastes can be composted – or recycled – into nutrient-rich soil.

2

Each person reads his/her Check This Out card and takes notes (you will need them later!)

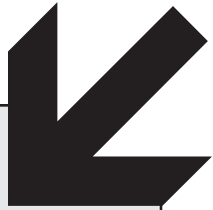
3

As a group, answer the following questions. Hint: Each team member has different information that will help.

think about it!

1. A California law required each city and county in California to develop programs that divert 50% of its solid waste from landfills and waste-to-energy facilities by the year 2000 through source reduction, recycling and composting. Most cities did not meet this goal and filed for extensions. Why is this goal important to us as students? Give at least three reasons.
2. What are some advantages of composting our food and yard wastes?
3. If we wanted to compost at school or at home, where would we start?
4. How can we encourage our classmates, friends, and neighbors to help reduce the amount of compostable materials being disposed of in landfills?

STUDENT PAGE



THE ROTTEN TRUTH

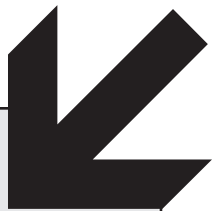
1



CHECK THIS OUT

- Composting is a kind of recycling – recycling the nutrients and minerals found in once-living things, specifically food and yard wastes.
- As food decays, bacteria, fungi, worms and other tiny organisms break it down into nutrient-rich soil called humus or compost.
- Composting produces rich soil that can be used in home, school or community gardens, farms, and flower beds. Compost can even be used to keep house plants healthy.
- Plants get nutrients from the soil in which they're growing. Healthy soil needs a constant supply of nutrients.

STUDENT PAGE



THE ROTTEN TRUTH

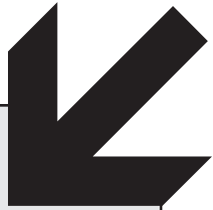
2



CHECK THIS OUT

- Approximately 36% of the trash in L.A. landfills is made up of food scraps and yard waste.
- Organics, food waste and green waste make up about 31% of the total waste generated at each school in Los Angeles County.
- Each year, the average student produces about 48 lbs. of food waste that ends up in landfills. That equals 155,000 tons of food waste that schools produce and dispose of each year in area landfills.
- All yard waste (branches, grass clippings, fallen leaves) and non-dairy or meat food scraps can be composted. Shredded paper and saw dust can also be composted.

STUDENT PAGE



THE ROTTEN TRUTH

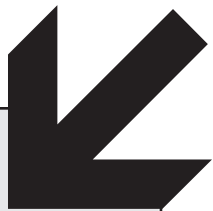
3



CHECK THIS OUT

- About 30% of California's waste can be composted. Large-scale composting is used in some communities to keep yard waste out of landfills. Los Angeles County has several active composting facilities to recycle yard waste and sewage sludge (the waste left after sewage is treated).
- In large-scale composting, sometimes paper products with coatings, and certain types of inks or trace metals get into the compost mix. These items can contaminate the compost, making it unsafe to use.
- Organizations like the Los Angeles County Department of Public Works, the California Integrated Waste Management Board, as well as environmental centers, nature centers, garden centers, and recycling centers can provide information about composting at home or in your community. To find out more about composting in Los Angeles County, call 1-888-CLEAN-LA or visit www.smartgardening.com.

STUDENT PAGE



THE ROTTEN TRUTH

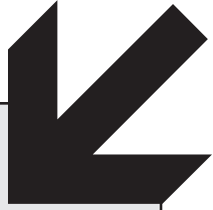
4



CHECK THIS OUT

- Composting food waste is a waste management technique that can be completed right at home.
- If you have a backyard, you can compost outdoors with a few bricks or wooden boxes and a shovel. Using worms, you can compost indoors in any small, dark space. Some people keep worm bins under the kitchen sink. Worm composting is called vermicomposting.
- Several simple conditions must be met for composting to work well. Air and moisture must be present. There must be a large enough quantity of composting material to keep the bacteria alive, and a good balance between wet and dry materials (browns and greens). Compost must be turned occasionally to keep the lower levels full of air.
- Decaying food doesn't have to stink! In well-maintained composting facilities, decomposition occurs relatively quickly and does not produce bad odors or toxic gases.

STUDENT PAGE



THE ROTTEN TRUTH

5



CHECK THIS OUT

- In natural systems, nutrients are returned to the topsoil – the nutrient-rich layer of soil where plants grow – through decomposition of dead plants and animals.
- In urban areas – where dead animals and plants aren't often left to rot and replenish the soil – compost can play an important role in keeping soil healthy.
- Some agricultural practices deplete the soil of nutrients needed for crop growth and lead to loss of topsoil. Loss of topsoil creates poor soil quality in many areas throughout the world.
- Composting can help replenish the soil without the use of chemical fertilizers. Chemical fertilizers used on crops are sometimes washed into waterways that end up polluting streams, lakes, rivers and other water sources.

STUDENT PAGE



TOPIC CARD: HAZARDOUS HAPPENINGS

1



READ THIS AS A GROUP

You may not think of your home as a storage place for dangerous products, but check the labels on the cans and bottles under the sink: all products labeled “corrosive,” “flammable,” “irritant,” or “poison” contain hazardous compounds. Consumer electronics, including cell phones, computers and televisions, contain potentially harmful substances that can get into the environment. Hazardous wastes contain potentially toxic substances that can be harmful to human health or the environment, especially if not disposed of properly.

2

Each person reads his/her Check This Out card and takes notes (you will need them later!)

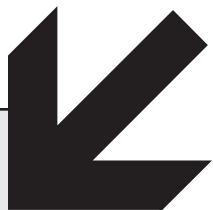
3

As a group, answer the following questions. Hint: Each team member has different information that will help.

think about it!

1. Why is it important to us as students to help keep hazardous materials out of Los Angeles landfills? Give at least three reasons.
2. How can we safely dispose of household hazardous wastes?
3. What effect does buying batteries or cleaning supplies have on the environment?
4. What can we do to encourage manufacturers to reduce the number of toxic household products they make?
5. How can we encourage our classmates, friends, and neighbors to help reduce the toxic substances being used at home or school?

STUDENT PAGE



HAZARDOUS HAPPENINGS

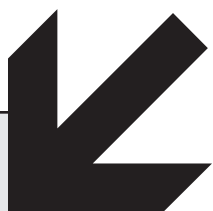
1



CHECK THIS OUT

- Only about 1% of household waste is estimated to be made up of hazardous compounds, but it has the greatest potential to pollute the environment through improper and often illegal disposal.
- Many common household products turn into hazardous wastes. Products like bathroom cleaners, batteries, bug spray, disinfectants, drain cleaners, empty aerosol cans, floor care products, glue, lighter fluid, moth balls, motor oil, nail polish remover, oven cleaners, oil-based paints, perfumes, rat poison, and window cleaners are all examples of hazardous waste.

STUDENT PAGE



HAZARDOUS HAPPENINGS

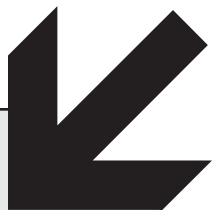
2



CHECK THIS OUT

- It is illegal to dispose of most hazardous wastes in a landfill or waste-to-energy facility, a place that turns garbage into electricity.
- If we throw hazardous materials into the trash at home or at school, they will most likely end up in landfills or at waste-to-energy facilities throughout Los Angeles County.
- Workers are sometimes hurt by unknowingly handling toxic materials that have been thrown into the trash.

STUDENT PAGE



HAZARDOUS HAPPENINGS

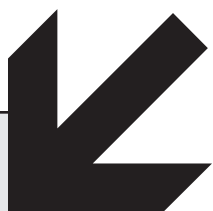
3



CHECK THIS OUT

- Chemicals from hazardous wastes do not easily degrade. Once in the environment, they last an extremely long time, continuing to be a serious health hazard.
- Once hazardous chemicals get into the water system – whether through the drain or the gutter – they can be taken up into plants through their roots. As the plants move their way up the food chain to larger and larger animals, the chemicals accumulate in a process called bio accumulation. As a result, animals high on the food chain can die from eating large doses of toxic chemicals.
- Humans eat high on the food chain and can be harmed by eating goods containing large concentrations of toxic chemicals.

STUDENT PAGE



HAZARDOUS HAPPENINGS

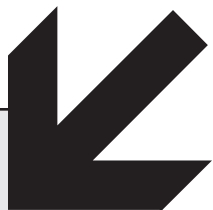
4



CHECK THIS OUT

- Electronics may contain lead, copper, and other heavy metals or potentially toxic substances. This makes it critical to reduce e-waste by only buying what you need, reusing electronics that still work, and recycling them at the end of their useful life cycle.
- The Household Hazardous Waste Collection Program in Los Angeles County is a good way to dispose of hazardous household products. Through the program, residents can bring many kinds of unwanted chemicals and electronics, free of charge, to roundup locations throughout the county or to one of the five permanent collection facilities for proper disposal. Call 1-888-CLEAN-LA for collection facility locations and event dates in your area.

STUDENT PAGE



CHECK THIS OUT

HAZARDOUS HAPPENINGS

5



- Hazardous materials are almost always labeled and include directions for proper disposal. Some must be taken to special collection sites designed for household hazardous materials.
- There are safe alternatives to many household hazardous materials. For instance, vinegar and baking soda can be used in place of window cleaners and cleansers.
- One of the best ways to avoid the dangers of household hazardous wastes is not to buy them in the first place.

STUDENT PAGE



DON'T TRASH THE NEIGHBORHOOD

READ THIS AS A GROUP

1



Ever take a walk in your neighborhood and see abandoned furniture, tires, appliances or other unwanted items dumped in alleys, vacant lots, and other open spaces? Dumping these items is not only ugly; it's unsafe and illegal! People caught illegally dumping trash or unwanted items may be subject to a \$4,000 fine and six months in jail.

2

Each person reads his/her Check This Out card and takes notes (you will need them later!)

3

As a group, answer the following questions. Hint: Each team member has different information that will help.

think about it!

- 1.** What have you seen around your neighborhood or elsewhere that may have been illegally dumped?
- 2.** Name three reasons it is important to us as students to help prevent illegal dumping in our neighborhoods.
- 3.** What can we do to encourage our classmates, friends, and neighbors to help reduce illegal dumping in our neighborhoods?

CHECK THIS OUT

DON'T TRASH THE NEIGHBORHOOD

1



- Properly disposing of large items requires that dumping fees be paid to a recycle facility or landfill. To avoid these fees, some residents and waste haulers dump their stuff anywhere they want.
- Some businesses pay independent contractors to haul away trash. Sometimes, the contractors dump wastes illegally rather than pay landfill fees so they can make more money. The business owners may or may not know their trash is not being disposed of safely and legally.

STUDENT PAGE

CHECK THIS OUT

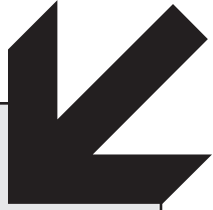
DON'T TRASH THE NEIGHBORHOOD

2



- Illegal dumping saves money for the “dumper,” but costs you money in the end. The Los Angeles County and its cities have to spend millions of tax dollars to clean up trash and unwanted items dumped in alleys and streets. If everyone disposed of their materials legally and properly, this money could be used for schools or other causes.
- Some individuals and businesses have been caught illegally dumping toxic chemicals into the Los Angeles River to avoid fees or to get around obtaining permits. This can seriously impact drinking water, and have damaging effects on plants and animals throughout the water system.

STUDENT PAGE



DON'T TRASH THE NEIGHBORHOOD

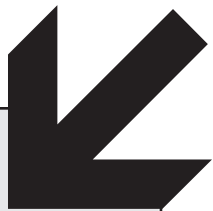
3



CHECK THIS OUT

- Illegally dumped trash and unwanted items can attract insects and rodents creating health and safety concerns. Rodents can spread disease, chew through wiring, and otherwise harm the environment and human health.
- As some illegally dumped items degrade and break down, they can add hazardous metals to the ground and waterways.
- Televisions, computers, and other electronic waste (e-waste) have cathode ray tubes, which contain lead. Many e-waste items are considered hazardous waste to the environment. E-waste should be donated, properly recycled or disposed of by a hazardous waste facility.

STUDENT PAGE



DON'T TRASH THE NEIGHBORHOOD

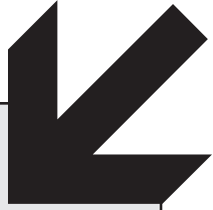
4



CHECK THIS OUT

- People caught dumping illegally can be fined up to \$4,000 and jailed for six months. However, it is often difficult for local law enforcement agents to catch these criminals. Citizens who want to help prevent illegal dumping can call law enforcement agencies and report these offenses on their own.
- There are programs available in most cities to help with the disposal of large, bulky items and household hazardous wastes. Los Angeles County residents can call their local waste hauler, city recycling coordinator or 1-888-CLEAN-LA for help.

STUDENT PAGE



CHECK THIS OUT

DON'T TRASH THE NEIGHBORHOOD

5



- Haulers who dump illegally usually don't do it in their own backyards. They look for places where they won't get caught. They could be dumping illegally right in your neighborhood.
- Periodic neighborhood cleanup projects may discourage illegal dumping. It is believed that illegal dumpings are less likely to happen in clean, watched neighborhoods than in areas that are already full of trash.

STUDENT PAGE



POLLUTION GOING DOWN THE DRAIN

READ THIS AS A GROUP

1



The rectangular openings or “catch basins” at the end of your street are more important than you may realize. Street gutters drain water off the streets through catch basins and storm drains. These openings lead to flood control channels that, in turn, carry the water directly to the ocean. With it goes everything that the water picks up as it travels through streets and into the ocean.

2

Each person reads his/her Check This Out card and takes notes (you will need them later!)

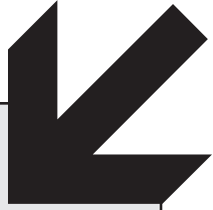
3

As a group, answer the following questions. Hint: Each team member has different information that will help.

think about it!

1. When it comes to rainfall, how do urban areas differ from natural areas? What causes stormwater runoff in urban areas?
2. What are some common trash items that end up in our stormwater runoff? Where do these pollutants come from?
3. Name three reasons it is important to us as students to prevent polluted stormwater runoff.
4. What can we do to encourage our classmates, friends, and neighbors to help reduce stormwater runoff pollution?

STUDENT PAGE



POLLUTION GOING DOWN THE DRAIN

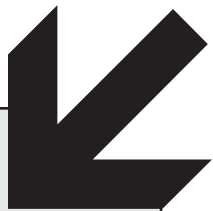
1



CHECK THIS OUT

- In natural settings, rainwater hits the ground and seeps into the soil helping to replenish underground water supplies.
- In urban environments, most rainfall never reaches the soil that is underneath paved surfaces. Instead, it hits our streets and runs across pavement, through gutters, and into storm drains. This water is called runoff.
- Storm drains help prevent urban flooding by carrying large volumes of urban runoff through concrete flood channels to the ocean. Water that enters storm drains on the streets is carried directly to the ocean. Many residents do not realize that water from Los Angeles goes straight to the ocean without treatment.

STUDENT PAGE



POLLUTION GOING DOWN THE DRAIN

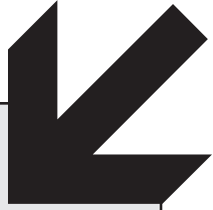
2



CHECK THIS OUT

- Since many compounds and chemicals easily dissolve in water, urban runoff carries with it almost anything dumped into a gutter or storm drain. Urban runoff is a significant source of ocean pollution.
- Litter, dog excrement, cigarette butts, fast food packaging, plastic shopping bags, gum, leaking motor oil – anything on the ground – can end up washed into gutters and carried to the ocean.
- Pollution from urban runoff creates health risks for children, kills marine life, and causes beach closures. Beach cities discourage swimming after a storm because of elevated bacteria levels in the water.

STUDENT PAGE



POLLUTION GOING DOWN THE DRAIN

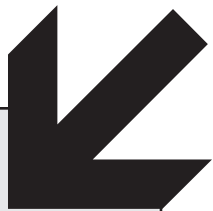
3



CHECK THIS OUT

- About 35% of the drivers in Los Angeles change their own motor oil. This used oil is often dumped.
- One gallon of used motor oil, poured into the gutter or dripped from a car, can potentially contaminate up to one million gallons of ocean water.
- About 306 million gallons of motor oil are sold in California each year. Of that, about 93 million gallons are collected and recycled each year. That means that just over 200 million gallons of motor oil are not being collected and recycled.
- There are over 635 Certified Collection Centers (CCCs) in Los Angeles County where collected motor oil is cleaned and re-refined for future use. Check with your city recycling coordinator for locations or go to www.ciwmb.ca.gov/usedoil/CrtCntrs.asp to put in your zip code for a CCC near you.

STUDENT PAGE



POLLUTION GOING DOWN THE DRAIN

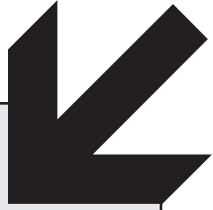
4



CHECK THIS OUT

- Pesticides and fertilizers used on lawns or gardens, can be washed off plants and carried through storm drains to the ocean.
- Hosing down a driveway or sidewalk or washing a car in the street can send water contaminated with chemicals through storm drains to the ocean.

STUDENT PAGE



POLLUTION GOING DOWN THE DRAIN

5



CHECK THIS OUT

- Pesticides are toxic to many different life forms. In the ocean, they are often absorbed along with nutrients by plants. As marine plants are eaten by the food chain, chemicals accumulate in the fatty tissues of fish and other animals. This is called bioaccumulation. Animals, including humans that eat larger fish can be seriously affected by eating large doses of toxic chemicals.
- Humans also eat high on the food chain and can be harmed by eating foods containing large doses of toxic chemicals.
- Lawns and gardens can be grown and maintained without the use of chemical pesticides, even if insect predators are present. This is called organic gardening or farming.

STUDENT PAGE



SERVICE PROJECT IDEA MAPPING

TIME  45 MINUTES

OVERVIEW

Student teams reflect on what they have learned about an environmental issue and using the Idea Map, develop ideas on poster board as the first steps to planning a service project.

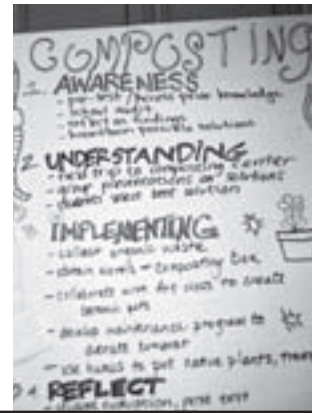


materials

- ☐ Poster paper – 1 per group
- ☐ Markers – 1 set per group
- ☐ Idea Map (both sides) – 1 per group

procedure

1. Use the students' reflections about what they have learned to begin a discussion that leads to choosing a service project that could help the school/community.
2. Break students up into working groups.
3. Distribute an Idea Map to each group. One side gives instructions and the other shows how to set up the poster.
4. Explain to students how to follow the map and create an idea for a project by illustrating it on poster paper to present to the class (see sample on the back of the map).
 - a. Target the Environmental Issue – What have students been studying? What did they find out as a result of their audit? This is listed at the top of their poster.
 - b. Project Idea – What ideas do they have for a project that will improve or eliminate the environmental issue? This is stated in the center circle.
 - c. Project Goal – This is the goal describing what they want to achieve. A quantifiable goal is easiest to assess. This is listed at the bottom of their poster.



TEACHER GUIDELINES

SERVICE PROJECT IDEA MAPPING CONTINUED

TEACHER GUIDELINES

- d. Human Resources – These are their resources. Who can help them to achieve their goal – community organizations, agencies, principal? These are listed in the top right circle.
 - e. Supplies and Materials – These are the materials necessary to complete the project. Do any cost money or can they be donated? These are listed in the bottom right circle.
 - f. Timeline – This is an estimated timeline. How much time will it take to accomplish and how much time do they have to complete it? Is it a one day or a one month project? This is listed in the top left circle.
 - g. The Bigger Picture – This lists the greater impact to the community and the environment. What significance will the project have? This is listed in the bottom left circle.
5. Once complete, have each group present their ideas to the class.
6. As a class, looking at the resources, materials, time, and impact on the community, have students assess and choose which project seems most practical and most exciting to them.



1

Target the Issue

What are some concerns on your campus/in your community?

WASTE REDUCTION

After nutrition/lunch, is there trash on the ground?

RECYCLING

Is there an unsuccessful recycling program at your school?

CAMPUS FLOODING

Does your campus flood when it rains?

WATERSHED PROTECTION

Are there pollutants/trash in the river/beach near your school?

ILLEGAL DUMPING

Are there items (couches, etc.) that are dumped illegally near your school?

List the environmental issue at the top of your poster.



2

Project Idea

What are you going to do about it?

Some examples include:

WASTE REDUCTION

Idea: Conduct a waste reduction campaign.

RECYCLING

Idea: Set up a classroom recycling contest.

CAMPUS FLOODING

Idea: Plant trees and/or a native plant garden.

WATERSHED PROTECTION

Idea: Conduct an e-waste collection campaign.

ILLEGAL DUMPING

Idea: Conduct a community-wide education and clean-up project.

Place your project idea in the center circle of your project poster.

6

Timeline

When does your project need to be completed?

EXAMPLE:

It needs to be completed by Earth Day – We have one month

Write your timeline in the upper left circle of your project poster.

Supplies/ Materials

What do you need?

Do they cost money? Can some be donated or do you need to raise money?

Write out what you need and how you can get them in the lower right circle of your project poster.

5

Human Resources

Who are the people and/or organizations that can help you achieve your goal?

EXAMPLE:

Principal • Community members
Government Agencies • Advisor
Family/friends • Students
Environmental Organizations

Write your resources in the upper right circle of your project poster.

4

Project Goal

What do you hope to achieve?

EXAMPLE:

We will reduce waste on campus by 50% – half the number of dumpsters filled each trash pickup.

Write your goal at the bottom of your project poster.

3

7

The Bigger Picture

What significance will this project have on you, your community and the environment?

EXAMPLE:

Us: It will reduce the amount of trash we see on campus.

Community: It will provide extra money for the school from recycling paper and bottles.

Environment: It will cut down on the amount of waste going to landfills and save natural resources.

Write your Big Picture in the lower left circle of your project poster.

8

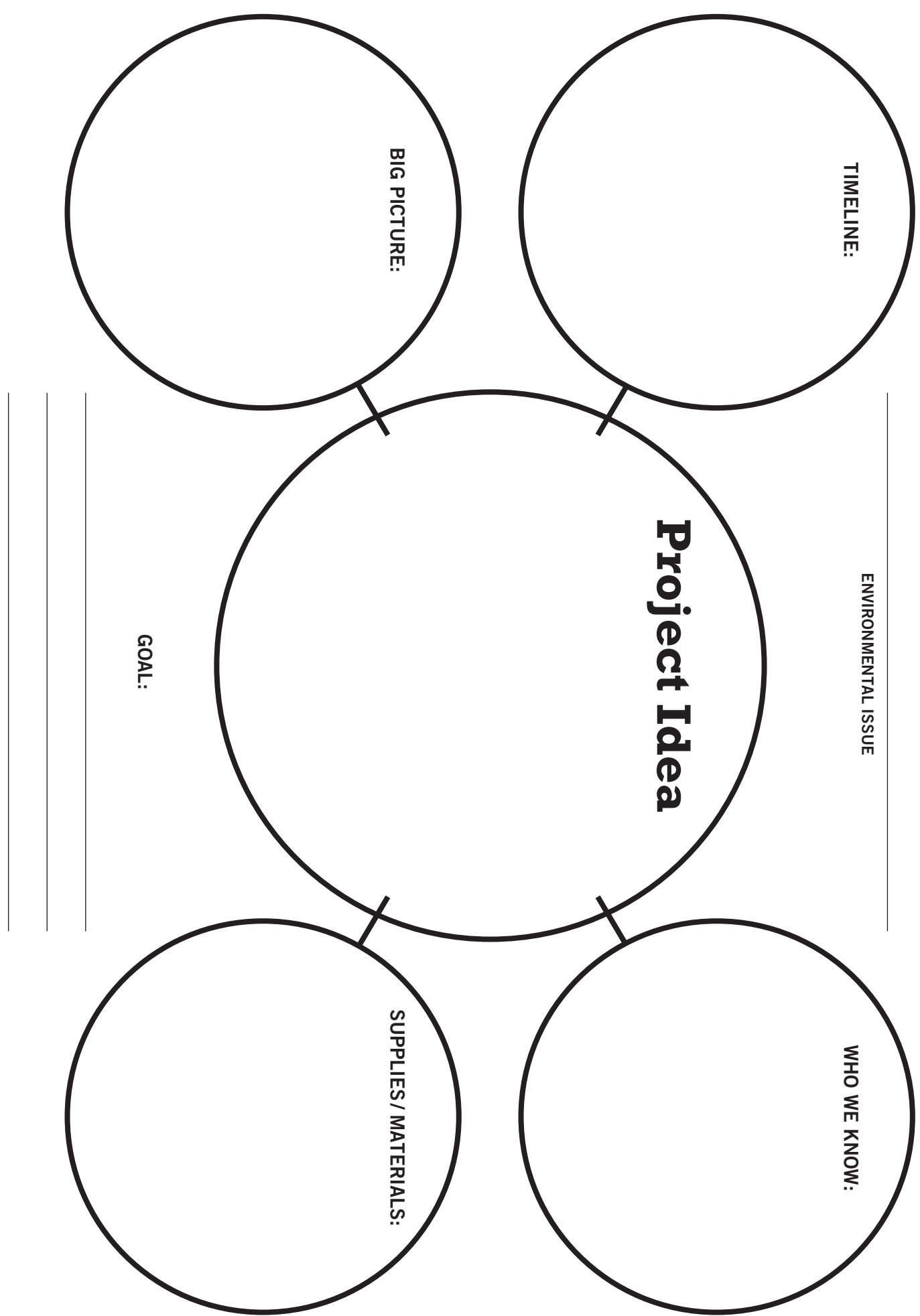


CONGRATULATIONS!



You made it!
You now have an idea to present!

IDEA MAP



STUDENT ACTION GUIDE

TIME  VARIES

OVERVIEW

Students take on the task of planning and following through on an environmental service learning project. With the guidance of their Student Action Guides, students keep track of their tasks, progress, resources and budget. A Project Manager Student Action Guide is also available for the project manager to keeping track of timeline, managing students, and running meetings. After completion, students evaluate their project and celebrate what they learned and experienced.



materials

- ☐ Student Action Guide – 1 per student
- ☐ Project Manager Student Action Guide – 1 per student project manager
- ☐ Depends on the project
- ☐ Mural paper
- ☐ Markers

procedure

1. Have students create a task web showing all the tasks necessary to complete their chosen service project. Have them use mural paper to show the tasks. Begin by placing the name of their project in the center of the paper and circling it. Branching out from the center circle place main tasks in circles. Include sub-tasks branching out from each main task, until they have created a large “task web.”
2. Decide who will be responsible for each of the main tasks.
3. Using a calendar, go over the following with the students:
 - a. When does the project have to be completed?
 - b. How many days/weeks/months do they have until the date?
 - c. How often will they need to meet to check in on their progress?
 - d. How many meetings do they have until the completion date, and what are those dates?

TEACHER GUIDELINES



STUDENT ACTION GUIDE CONTINUED

TEACHER GUIDELINES

4. Using this information, have students assign a completion date for each main task.
5. Decide who will be the Project Manager.
6. Pass out a Student Action Guide to each student, and a Project Manager Student Action Guide to the chosen project manager.
7. As a class go through the following pages:
 - a. Page 2 and 3 – fill in the information as a class.
 - b. Pages 5 and 7 – fill in the information based on their assigned tasks.
 - c. Pages 8 and 9 – discuss how to track their progress. Explain that each student will be asked to share their progress each time they meet about the service project.
 - d. Pages 12 and 14 – discuss any possible costs and budget associated with the service project, and have them record costs directly related to their tasks. Include possible income to cover the costs.
 - e. Pages 14 and 15 – have students brainstorm any resources that can help with their tasks.
8. Spend time with the Project Manager to go through the Project Manager Student Action Guide. This guide has specific guidelines for managing the overall project and running progress meetings.
9. Continue to help facilitate the process allowing students to “own” the project, but helping where needed.
10. After the project is complete, have students answer the evaluation questions in the back of their Student Action Guides. Have students discuss the answers as a class before turning them in to you for assessment.
11. Encourage students to share their accomplishments with a local reporter or through a school display or assembly.
12. If possible, wrap up the unit with a celebration. Work with the students to come up with celebration ideas, such as a pizza party.

reflection

1. Have students use any method of reflection to express:
 - a. What values, opinions or decisions have I made or changed through this experience?
 - b. How effective was the project in lessening the impact on the environment?



ASSESSMENT



Assessment and evaluation are an important part of the Generation Earth program. In addition to the assessment and evaluation questions included in our support pieces, we have also provided a Student Project Rubric to help the classroom teacher to evaluate the success of the service projects.

- **PRE/POST TEST** – In order to measure the effectiveness of the program and gauge change in student attitude and action, we ask that you use the Pre/Post Test provided. This simple two question assessment should be completed before, and at the end of the unit. These are the second and tenth steps on the Generation Earth Program Pathway.
- **STUDENT PROJECT RUBRIC** – A student project rubric is provided for your use. The rubric is a tool for you to use in scoring/grading complex student projects. It is designed to give a reference point and language for raising expectations and achievement, as well as a way to gauge all Generation Earth projects.

We suggest presenting the rubric to students to be used in helping them choose their project after completing the Take Action Program Pathway activity. This will help students understand more clearly what is expected of them.

Generation Earth will be asking for your Student Project Rubric scores after projects are complete.

- **GENERATION EARTH EVALUATION STUDY** – As part of a long-term study, Generation Earth staff will collect data from participating teachers using program evaluation instruments developed by the State Education and Environment Roundtable T(SEER).

PRE/POST TEST

1. Photocopy and cut enough for each student to take the assessment.
2. Circle whether it is the pre or post questionnaire.
3. Place a student ID # to track student responses.



GENERATION EARTH WANTS TO KNOW...

Pre/Post Questions

Student ID # _____

1. List the actions you currently take that help the environment.

2. Are these actions important?

☐ Not at all important ☐ Somewhat important ☐ Important ☐ Very Important



GENERATION EARTH WANTS TO KNOW...

Pre/Post Questions

Student ID # _____

1. List the actions you currently take that help the environment.

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☐ Not at all important ☐ Somewhat important ☐ Important ☐ Very Important

STUDENT PROJECT RUBRIC



SCORE	1	2	3	4
Campus or Community Need	Met no campus/ community need	Met a campus/ community need established by the teacher only	Met a campus/ community need established by the teacher and students	Met a campus/ community need established by the teacher, students, and community stakeholders
Community Collaboration	Only project students were involved	The entire class/club was involved	Campus partnerships were formed (teachers, principal, maintenance, etc.)	A community of partners was involved or partnerships were formed with outside contacts (residents, non-profits, businesses, government agencies, etc.)
Project Goal	No clear project goal	Project goal was conceived but not connected to the project	Project goal clearly stated, connected to the project, but no formal evaluation of the goal was completed afterwards	Project goal clearly stated, connected to the project with formal evaluation of the goal completed afterwards
Environmental Impact	The project had no link to an environmental issue	The project had a link to an environmental issue but no clear impact was made	The project had a link to an environmental issue and an impact was made either on the students, the community or the environment	The project had a link to an environmental issue and an impact was made on students, the community, and the environment

RESOURCES



To assist you in creating a standards-based service learning program we have provided the following resources:

- **GLOSSARY OF TERMS** – A list of terms for your own use or classroom vocabulary words.
- **EDUCATIONAL/PROGRAM RESOURCES** – A list of resources for source reduction, recycling, illegal dumping, household hazardous waste, stormwater runoff, composting, and service learning are provided.
- **SAMPLE PROJECTS** – A list of ideas by environmental topic to assist you or your students in coming up with a project.
- **FIELD TRIP SUGGESTIONS** – A list of suggested field trips in and around Los Angeles County.
- **ENVIRONMENTAL INFORMATION** – More detailed information is provided about waste management, watershed management, and relative legislation.
- **GENERATION EARTH FORMS** – A Teacher Information Form for our use is supplied, as well as a Field Trip Request for obtaining a bus through Generation Earth.

GLOSSARY OF TERMS

ABIOTIC FACTOR - A non-living part of an ecosystem.

AQUEDUCT - Pipes and channels designed to bring water from a remote source, usually by gravity.

BACTERIA - The microscopic single-celled organisms that derive nourishment from dead or decaying matter.

BERM - A raised area.

BIOACCUMULATION - An increase in concentration of a pollutant from the environment to the first organism in a food chain

BIOTIC FACTOR - A living part of an ecosystem.

CATCH BASIN - The opening in a curb or gutter that catches water and directs it to storm drains.

COMMUNITY - The different organisms that live and interact with each other in an area.

CONDENSATION - The conversion of vapor (gas) into water (liquid).

CONTAMINATION - The introduction into water, air, soil of microorganisms, chemicals, toxic substances, wastes or wastewater in a concentration that make the medium unfit for its intended use.

COMPOSTING - The controlled decomposition of organic material such as leaves, twigs, grass clippings, and vegetable food waste. Compost is the soil amendment product that results from proper composting.

DECOMPOSER - An organism that breaks down wastes and organic matter.

DECOMPOSITION - The breakdown or decay of organic matter through the digestive processes of microorganisms.

ECOSYSTEM - A dynamic set of living organisms (plants, animals, microorganisms) all interacting among themselves and with the environment in which they live (soil, air, climate, water, light).

ENVIRONMENT - An organism's living (biotic) and non-living (abiotic) surroundings that affect and influence its development and survival.

EVAPORATION - The conversion of water (liquid) into a vapor (gas).

E-WASTE - Consumer electronic equipment that is no longer wanted, such as computers, printers, televisions, VCRs, cell phones, fax machines, stereos, and electronic games.

FERTILIZER - Nutrients used by plants for growth.

FRESHWATER - Water that is not salty.

FUNGUS - Any of a major group of spore-producing organisms that include molds, mildew and mushrooms.

GROUNDWATER - The freshwater that fills the cracks and pores beneath the earth's surface, which supply wells and springs.

GUTTER - A channel for draining off water.

HAZARDOUS WASTE - Products that contain chemicals that are harmful to humans and the land. Includes e-waste, such as cell phones, televisions and computers.

HYDROLOGIC CYCLE - The constant circulation of water between the earth's surface and its atmosphere-the water cycle.

ILLEGAL DUMPING - The dumping of hazardous chemicals, junk, used furniture, tires, and appliances in alleys, flood control channels, vacant lots, rural roads, railways or other areas not suitable for dumping.

INVESTIGATION - The process of using inquiry and examination to gather facts and information in order to solve a problem or answer a question.

LAND POLLUTION - The trash dropped on the land, such as gum, food wrappers, cans, paper, and plastic bags. It also includes pet waste and oil dripped from cars.

MICROORGANISM - A form of life too small to be seen by the naked eye.

NON-RENEWABLE RESOURCE - A resource which cannot be replaced once it is used up, for example fossil fuels (oil, natural gas, and coal).

ORGANISM - Any living thing.

PESTICIDE - Chemicals used to kill pests. Pests may include ants, termites, mice, and rats as well as agricultural pests.

POLLUTED RUNOFF - Sometimes referred to as nonpoint source pollution, is caused by rainfall or snowmelt moving over and through the ground, picking up pollutants along its journey to lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. Some of these pollutants are natural and others are man-made. In urban areas, polluted runoff is referred to as stormwater pollution or stormwater urban runoff.

GLOSSARY OF TERMS

POLLUTION - A change in the environment that eventually affects living things.

PRECIPITATION - Water deposited on the earth as hail, mist, fog, rain, sleet or snow.

PREDICTION - A guess based on information and experience.

RAIN GUTTER - A channel along the roof that collects and carries away rainwater.

REDUCE, REUSE RECYCLE - A phrase often used to describe ways to conserve natural resources and landfill space. Reducing is buying less to begin with; reusing is using items more than once such as rechargeable batteries; and recycling is breaking down products like newspapers and computer paper into resources that can be used again.

RENEWABLE RESOURCE - A naturally occurring resource, such as a forest, with the capacity to be replenished through ecological cycles and/or sound management practices.

RESERVOIR - A natural or artificial lake that stores water for human use.

RUNOFF - Water that flows over the ground that is not absorbed by soil, evaporated or transpired by plants, but finds its way into streams and rivers as surface flow.

SANITARY SEWER SYSTEM - An underground system of pipes that carries waste water from homes and businesses to treatment plants where it is cleaned, solids and pollutants are removed, and the water is discharged into the ocean.

STORM DRAIN - Above ground or below ground pipes and channels that transport stormwater to the ocean for flood control purposes.

STORMWATER - Created when trash, cigarette butts, animal waste, pesticides, motor oil and other contaminants left on the ground are washed or thrown directly into storm drains. This toxic soup mixes with millions of gallons of rainwater and flows untreated into local creeks, rivers and the ocean- polluting our waterways, as well as degrading neighborhoods and other natural resources. In rural areas, stormwater is referred to as polluted runoff or nonpoint source pollution.

SUSTAINABILITY - Meeting the needs of the present generation without compromising the ability of future generations to meet their needs.

TASK - An assigned piece of work to be finished within a certain time.

TIMELINE - The amount of time allowed for a project.

URBAN RUNOFF- Refers to water that originates in urbanized areas. Sources of urban runoff include precipitation, industry discharge, leaks, washing, irrigation and natural springs.

VERMICOMPOSTING - The practice of using worms to make compost by feeding them food waste. "Vermi" is the Latin word for worm.

WASTEWATER TREATMENT PLANT - The set of structures where water goes through a purification process.

WATER POLLUTION - The addition of any substance that has a negative effect on water and the living things that depend on water.

WATERSHED - The land area where water collects and drains onto a lower level property or into a river, ocean or other body of water.

WATERSHED MANAGEMENT - The integration and coordination of activities that affect the watershed's natural resources and water quality. It brings together services like flood protection, water conservation, preserving and creating open space for recreation and habitat, and reducing pollution of water resources.

WETLAND - An area of land that is covered by a shallow layer of water during some or all of the year.

EDUCATIONAL/PROJECT RESOURCES

Source Reduction, Recycling, Illegal Dumping, Household Hazardous Waste, E-waste

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

Information and resources on solid & hazardous waste, recycling, illegal dumping, household hazardous waste/ e-waste collection events, recycling coordinators contact info, and curriculum resources

900 South Fremont Avenue
Alhambra, CA 91803
(626) 458-4300
www.888cleanLA.com
www.ladpw.org/services/environment
www.ladpw.org/epd/

SANITATION DISTRICTS OF LOS ANGELES COUNTY

Information on wastewater and solid waste management

1955 Workman Mill Road, P.O. Box 4998
Whittier, CA 90607
(562) 908-4288
www.lacsd.org

CALIFORNIA REGIONAL ENVIRONMENTAL EDUCATION COMMUNITY NETWORK (CREEC)

Clearinghouse for environmental education resources, searchable resource directory, newsletter

TreePeople
12601 Mulholland Drive
Beverly Hills, CA 90210
(818) 623-4852
www.creec.org

CALIFORNIA ENVIRONMENTAL EDUCATION INTERAGENCY NETWORK (CEEIN)

State government consortium of environmental educators, listing of agencies, businesses, and non-profit organizations that have information, programs and projects for California residents, businesses, and schools relating to waste reduction and recycling of all materials

1001 I Street
Sacramento, CA 95812
(916) 341-6000
www.calepa.ca.gov/education/CEEIN/Resources

CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

Curriculum, school waste management education and assistance, publications, and kids stuff

1001 I Street, P.O. Box 4025
Sacramento, CA 95812-4025
(916) 341-6000
www.ciwmb.ca.gov/Schools

LOS ANGELES CONSERVATION CORPS

Provides comprehensive recycling program for recycling of bottles and cans on school campuses

2824 South Main Street
Los Angeles, CA 90007
(213) 749-3601
www.lacorps.org

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Curriculum, activities, games, and other educational materials to teach students about waste generation and management

U.S. EPA Region 9
75 Hawthorne Street
San Francisco, CA, 94105
(866) EPA-WEST
www.epa.gov/epaoswer/education/index.htm

EDUCATIONAL/PROJECT RESOURCES

Stormwater Urban Runoff

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

County listing of major watersheds and their watershed management, information, newsletters and events

900 South Fremont Avenue
Alhambra, CA 91803
(626) 458-4300
www.888cleanLA.com
www.ladpw.org/wmd/

CALIFORNIA REGIONAL ENVIRONMENTAL EDUCATION COMMUNITY NETWORK (CREEC)

Clearinghouse for environmental education resources, searchable resource directory, and newsletter

TreePeople
12601 Mulholland Drive
Beverly Hills, CA 90210
(818) 623-4852
www.creec.org

CALIFORNIA COASTAL COMMISSION

Listings of coastal and water quality programs. Educator section located under 'public education'

45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219
(415) 904-5200
www.coastal.ca.gov

CALIFORNIA DEPARTMENT OF WATER RESOURCES

Free water education materials including videos and DVD's on loan

1416 Ninth Street
Sacramento, CA 95814
(916) 653-9892
www.publicaffairs.water.ca.gov/education/catalog.cfm
www.publicaffairs.water.ca.gov/education/videos/

CITY OF LOS ANGELES

Stormwater Program with resources on public abatement, science and monitoring, and other background information on the City of Los Angeles water system

2714 Media Center Drive
Los Angeles, CA 90065
(323) 342-1501
www.lacity.org/SAN/wpd/index1.htm

FRIENDS OF THE LOS ANGELES RIVER (FOLAR)

Source for La Gran Limpieza (Great Los Angeles River Cleanup), River Watch and River School

570 W. Avenue 26, #250
Los Angeles, CA 90065
(323) 223-0585
www.folar.org

HEAL THE BAY

Information on Southern California coastal waters, watersheds and beach cleanups

3220 Nebraska Avenue
Santa Monica, CA 90404
(310) 453-0395, (800) HEAL BAY
www.healthebay.org

PROJECT WET

Curriculum guide and workshop dates

717 K Street, Suite 317
Sacramento, CA 95814
(916) 444-6240
www.water-ed.org/projectwet.asp

RIVER OF WORDS

Environmental art and poetry program that connects kids to watersheds

2547 Eighth Street, #13B
Berkeley, CA 94710
(510) 548-7636
www.riverofwords.org

EDUCATIONAL/PROJECT RESOURCES

Stormwater Urban Runoff

STATE WATER RESOURCES CONTROL BOARD

Erase the Waste program and other storm water resource sites

1001 I Street
Sacramento, CA 95814
(916) 341-5250
www.swrcb.ca.gov/erasetheWaste/index.html

THE RIVER PROJECT

Local hands-on educational programs

11950 Ventura Boulevard, Suite 9
Studio City, CA 91604
(818) 980-9660
www.theriverproject.org

URBAN EDUCATION PARTNERSHIP

Virtual tour of the Los Angeles River

315 West Ninth Street, Suite # 1110
Los Angeles, CA 90015
(213) 622-5237
www.lalc.k12.ca.us/target/units/river/tour/water.html

USGS

Water resources for the United States, curriculum, and mapping projects

345 Middlefield Road
Menlo Park, CA 94025
(650) 853-8300
www.water.usgs.gov

WATER QUALITY SERVICE LEARNING PROGRAM

Grade 6 Life Science water quality unit, teacher resources, and online discussion group

Public Affairs Office
California Water Boards
1001 I Street, P.O. Box 100
Sacramento, CA 95812
www.waterlessons.org

EDUCATIONAL/PROJECT RESOURCES

Composting/Vermicomposting

SMART GARDENING

Information on backyard and worm composting, grass recycling, water and fire wise gardening, workshops and demonstration centers

Sponsored by Los Angeles Department of Public Works, Environmental Programs Division

900 S. Fremont Avenue, 3rd Floor Annex
Alhambra, CA 91803-1331
1(888) CLEAN-LA
www.smartgardening.com

WORMPOOP

Local informational source on vermicomposting, worms and bins for sale

8469 18th Street
Alta Loma, CA 91701
(909) 987-2979
www.wormpoop.com

CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

Curriculum, school waste management education and assistance, publications, and kids resources

1001 I Street, P.O. Box 4025
Sacramento, CA 95812-4025
(916) 341-6000
www.ciwmb.ca.gov/Schools/Curriculum/default.htm

MARY APPELHOF'S SITE FOR WORM COMPOSTING RESOURCES

Information and resources for classroom and home

10332 Shaver Road
Kalamazoo, MI 49024
(269) 327-0108
www.wormwoman.com/acatalog/index.html

WORM DIGEST

Informational news source and forums on vermicomposting

1455 East 185th Street
Cleveland, OH 44145
(216) 531-5374
www.wormdigest.org/

EDUCATIONAL/PROJECT RESOURCES

Service Learning

LOS ANGELES COUNTY OFFICE OF EDUCATION

Co-sponsor of the Los Angeles Service Learning Partnership, service learning information and resources, events, grants

9300 Imperial Highway, Suite 109
Downey, CA 90242
(562) 922-6111
www.lacoe.edu/orgs/228/index.cfm

CONSTITUTIONAL RIGHTS FOUNDATION

Co-sponsor of the Los Angeles Service Learning Partnership, curriculum, youth internship program, and newsletter

601 S. Kingsley Drive
Los Angeles, CA 90005
(213) 487-5590
www.crf-usa.org

LEARN AND SERVE AMERICA

Service learning support, grants, training and technical assistance, and curriculum

1201 New York Avenue NW
Washington, DC 20525
(202) 606-5000
www.learnandserve.org

NATIONAL YOUTH LEADERSHIP COUNCIL

Publications, resources, and National Service Learning Conference information

1667 Snelling Avenue North
St. Paul, MN 55108
(651) 631-3672
www.nylc.org

NATIONAL SERVICE LEARNING CLEARINGHOUSE

Materials, referrals, reference and technical assistance, and national listserv

ETR Associates
4 Carbonero Way
Scotts Valley, CA 95066
(866) 245-SERV
www.servicelearning.org

NATIONAL SERVICE LEARNING PARTNERSHIP

Curriculum, project ideas, resources, and newsletter

Academy for Educational Development
100 Fifth Avenue
New York, NY 10011
(212) 367-4570
www.service-learningpartnership.org

YOUTH SERVICE CALIFORNIA

Youth programs, mini-grants, training, and technical assistance

663 13th Street
Oakland, CA 94612
(510) 302-0550
www.yscal.org

ENVIRONMENTAL SERVICE LEARNING PROJECT IDEAS

Jumping-off Points for Projects

- Partner with a marine science center or local river organization and provide consistent water quality testing during the school year.
- Plant trees on your campus.
- Write a public policy outlining watershed best management practices and present it to the administration, faculty and/or at a student assembly.
- Examine household products and the hazardous chemicals they contain. Start an awareness campaign and/or hold an event where students can make their own non-toxic alternatives.
- Design flyers, brochures or posters about the ways community members can help prevent pollution and distribute them in the neighborhood.
- Create a waste survey for students and community members to fill out. Compile the results and launch a public awareness campaign based on your findings.
- Organize an e-waste collection drive at your school.
- Plant a community garden at your school using native and other drought-tolerant plants.
- Hold a composting workshop on your campus to show how gardeners can use organic waste instead of chemical fertilizers. Implement composting on your campus.
- Create a comic book or other artwork illustrating an environmental issue on your campus that can be printed and passed out to students.
- Clean up a vacant lot or other site used for illegal dumping in your neighborhood.
- If water quality problems are the result of off-campus practices, write a letter to the principal, mayor and/or city representatives to provide ideas about resolving the problem. Follow up with them to see what can be done to address it.
- Start a recycling awareness campaign by collecting and displaying items that could be recycled but are currently being discarded in campus trash dumpsters.
- Organize a lunchtime student litter patrol.
- Make posters on good water quality management tips and post them in classrooms and sites around the community. Create a way to measure the effectiveness of the posters.

ENVIRONMENTAL SERVICE LEARNING PROJECT IDEAS

Jumping-off Points for Projects CONTINUED

- Start a recycling program for paper, cans, glass, etc. At the start, check the amount of large trash bins filled each week by the school, and then create a measurable goal to monitor and reduce that amount each month. Students may separate, weigh, and recycle trash for cash, generating money for school activities.
- Work with school facility managers to remove concrete and add more trees and grassy areas to your campus to absorb water and prevent it from flowing into storm drains.
- Hard soil doesn't absorb rainwater. Improve soil quality at the school by using mulch or another alternative such as ground cover in key areas. Monitor the results of your work.
- After examining the flow of water on your campus, obtain permission to stencil signs next to storm drains warning people not to dump litter into them.
- Adopt a stream, river or local park. Clean up a portion and help maintain it. Figure out where the main sources of trash and pollution originate and work to alleviate the problem. Create photo or video essays documenting what you find and share them with the campus/community.



consider these general tips:

- Have students update your principal and/or vice-principal on project progress to ensure their support.
- Enlist other classes and teachers for more help. Math teachers can have students measure trash levels or water usage. Drama and video teachers can have students create performances and presentations on the project topic. English and language teachers can have students create bilingual brochures on the project topic.
- Enlist the support of ASB or Student Council.
- Enlist the support of PTSA.
- Enlist the support of a campus club such as a recycling or environmental club.
- Use morning announcements and/or a school newspaper as an opportunity to advertise your project or event.
- Have students do a presentation at a local elementary or middle school on what they have learned.
- Take students to a school board meeting to make a presentation on their project.
- Write letters to local governmental officials inviting them to participate in your project or event or to help with the problem.
- Create incentives for behavior change, i.e. setting up recycle bins where students "vote" with their cans to determine what kind of music will be played at lunch.
- Plan your project or event around a special day like Cesar Chavez Day, Martin Luther King Day of Service or Earth Day to involve more people in your project.

FIELD TRIP SUGGESTIONS

Waste related

BURBANK RECYCLE CENTER

Student tours
500 Flower Street
Burbank, CA 91502
(818) 238-3900
www.burbankrecycle.org/

DONALD C. TILLMAN WATER RECLAMATION PLANT/ JAPANESE GARDEN

Student tours
6100 Woodley Avenue
Van Nuys, CA 91406
(818) 778-4138
www.lasewers.org/treatment_plants/tillman/

HYPERION TREATMENT PLANT

Student tours
12000 Vista del Mar
Playa del Rey, CA 90293
(310) 648-5363
www.cityofla.org/san/http.htm

LOS ANGELES-GLENDALE WATER RECLAMATION PLANT

Student tours
4600 Colorado Boulevard
Los Angeles, CA 90039
(213) 972-1305
www.lasewers.org/treatment_plants/la_glendale/index.htm

LAS VIRGENES MUNICIPAL WATER DISTRICT

Student tours on Tuesdays and Thursdays: Las Virgenes Reservoir & Westlake Filtration Plant, Tapia Water Reclamation Facility, and Rancho Las Virgenes Composting Facility
4232 Las Virgenes Road
Calabasas, CA 91302
(818) 251-2100
www.LVMWD.com

SANITATION DISTRICTS OF LOS ANGELES COUNTY

Student tours of Puente Hills Landfill and Wastewater Treatment Plant
1955 Workman Mill Road
Whittier, CA 90601
(562) 699-7411
www.lacsd.org/

SANTA MONICA COMMUNITY RECYCLING CENTER

Student tours
2411 Delaware Avenue
Santa Monica, CA 90404
(310) 458-8916
santa-monica.org/epd/residents/Education/fieldtrip.htm

SUNSHINE CANYON LANDFILL

Student tours
14747 San Fernando Road
Sylmar, CA 91342
(818) 362-1567
www.csun.edu/~vceed002/BFI/sunshine.html

HOUSEHOLD HAZARDOUS WASTE EVENT SCHEDULE

Includes battery recycling.
ladpw.org/general/enotify/Calendar_Template/Calendar.aspx

FIELD TRIP SUGGESTIONS

Water related

Marine Science Centers

LOS ANGELES COUNTY MARINE SCIENCE PROGRAMS

Programs include Marine Science Floating Laboratories, Oceans Alive school presentations, Roundhouse Marine Studies Laboratory, Seashore Field Studies and "From the City to the Sea" assemblies for school

Los Angeles County Office of Education
Outdoor and Marine Education Office
9300 Imperial Highway
Downey, CA 90242
(562) 922-6330

AQUARIUM OF THE PACIFIC

Student tours

100 Aquarium Way
Long Beach, CA 90802
(562) 590-3100
www.aquariumofpacific.org/education/schols/gen-info.html

CABRILLO MARINE AQUARIUM

Student tours

3720 Stephen White Drive
San Pedro, CA 90731
(310) 548-7562
www.cabrilloaq.org/tours.html

CENTER FOR MARINE STUDIES

Student tours

3601 South Gaffey Street
San Pedro, CA 90731
(310) 547-9888
www.mar3ine.org/centerformarinestudies.htm

LONG BEACH MARINE INSTITUTE

School programs including shipboard excursions, labs at sea and age-appropriate student tours

5875 Appian Way
Long Beach, CA 90803
(562) 431-7156
www.longbeachmarine.org/

MALIBU FOUNDATION FOR ENVIRONMENTAL EDUCATION

Sponsors an Earth Day Adopt-A-Beach Kids Clean-Up Day at a local southland beach

1471 S. Bedford Street, # 3
Los Angeles, CA 90035
(310) 652-4324
www.malibufoundation.org/

OCEAN CONSERVATION SOCIETY

Sponsors kayak clean-ups on the ocean in September and April, and Adopt-A-Dolphin program

PO Box 12860
Marina Del Rey, CA 90295
(310) 822-5205
www.oceanconservation.org/involved/kayakcleanup.htm

ROUNDHOUSE MARINE STUDIES LAB AND AQUARIUM

Student tours

End of the Manhattan Beach Pier
Manhattan Beach, CA 90267
(310) 379-8117
www.roundhouseaquarium.org/school.html

SANTA MONICA PIER AQUARIUM

Student tours

1600 Ocean Front Walk
Santa Monica, CA 90401
(310) 393-6149 x105
www.healthebay.org/smpa/visitor/hoursfee.asp

SEA LAB

Student tours

1021 North Harbor Drive
Redondo Beach, CA 90277-6912
(310) 318-7438
www.lacorp.org/education.html

FIELD TRIP SUGGESTIONS

Water related

Marine Science Centers Continued

UCLA INSTITUTE OF THE ENVIRONMENT

Sponsors the GLOBE in the City Program, “cruising classrooms” ship tours for education and research

1365 Hershey Hall
610 Charles E. Young Dr. South UCLA
Los Angeles, CA 90095
(310) 825-5008
www.ioe.ucla.edu/seaworld

Other water related field trip sites

BALLONA CREEK RENAISSANCE

Sponsors clean-ups, water quality testing, murals, and river projects

10916 Braddock Drive
Culver City, CA 90230-4211
(310) 839-6896
www.ballonacreek.org/

RESOURCE CONSERVATION DISTRICT OF THE SANTA MONICA MOUNTAINS

Student tours at a variety of Santa Monica Mountains parks. Includes water quality testing

122 North Topanga Canyon Boulevard
Topanga, CA 90290
(310) 455-1030
www.rcdsmm.org/

ENVIRONMENTAL INFORMATION

Watershed Management Information

From the County of Los Angeles Department of Public Works

WHAT IS STORMWATER POLLUTION?

Storm drains are intended to take rainwater straight to the ocean to avoid area flooding. Rainwater or even runoff from sprinklers or hoses carries contaminants – such as litter, animal waste, automobile fluids, fertilizers and pesticides – into the storm drains and pollutes the County's neighborhoods and waters, creating health risks for children, killing marine life and contributing to localized flooding and beach closures.

WHERE DOES THE POLLUTION COME FROM?

We all contribute to stormwater pollution every day. Dropping cigarette butts on the ground, allowing paper or trash to blow into the street, and hosing leaves or dirt into the street are just a few examples of things you might be doing that contribute to stormwater pollution. Waters that flow over streets, parking lots, construction sites and industrial facilities carry these pollutants through a 5,000-mile storm drain network directly to the rivers and beaches of Southern California.

ISN'T STORMWATER TREATED BEFORE GOING INTO THE OCEAN, LIKE SEWER WATER?

No! The storm drain system is separate from the sewage system. Storm drains are intended to take rainwater straight to the ocean to avoid area flooding. Storm drain water is not treated before flowing directly into rivers and the ocean, making it everyone's responsibility to make sure storm drains and waterways are free of pollutants.

HOW DOES STORMWATER POLLUTION AFFECT MY COMMUNITY?

Stormwater pollution can also have serious impacts on your neighborhood. Litter and animal waste in the streets and storm drains makes any neighborhood look bad and can contribute to flooded streets during the rainy season.

We also see the impacts of pollution in increased health risks to swimmers near storm drains, high concentrations of toxic metals in harbor and ocean sediments, and toxicity to aquatic life. These impacts translate into losses to the County's \$2 billion a year tourism economy, loss of recreational resources, dramatic cost increases for cleaning up contaminated sediments and impaired function and vitality of our natural resources. Clogged storm drains can lead to area flooding when it rains, creating traffic problems and unsanitary conditions. Pollutants in the community such as pet waste, litter and hazardous contaminants significantly degrade the appearance of the neighborhood and can lower property values.

ENVIRONMENTAL INFORMATION

Watershed Management Information Continued

From the County of Los Angeles Department of Public Works

WHAT CAN I DO TO PREVENT STORMWATER POLLUTION?

Everyone can help keep the County of Los Angeles clean. Here are a few tips that can help protect our environment.

- Don't put anything in storm drains but rainwater. Storm drains and flood control channels carry surface runoff directly to the rivers and ocean without treatment. Make sure that runoff carries only rainwater.
- Avoid throwing litter into the street. Trash-laden gutters increase neighborhood pollution and clog storm drains causing street flooding and more traffic congestion.
- Pick up after your pet. Animal waste, when left on the ground, washes down storm drains and contaminates beaches. Picking up dog waste is a County ordinance and dog owners disregarding this law may be fined.
- Recycle your motor oil. There are more than 650 gas stations, auto parts stores and repair shops that will collect and recycle used motor oil.
- Bag, compost or recycle grass, tree limbs, leaves, and other yard waste. Soggy yard waste is a major contributor to clogged storm drains and street and neighborhood flooding.
- Use yard waste as mulch, natural fertilizer or as ground cover. Nearly 20% of the waste buried in landfills is from our yards – like grass and tree trimmings.
- Encourage local businesses to start a recycling program if they don't already have one. Today's consumers take their business to companies that have an environmental conscience.
- Use double-sided photocopies. You can cut down on paper costs and reduce waste by making double-sided originals and copies whenever possible.
- Don't use harsh, abrasive or toxic chemicals around the house. Select water-based products over solvent-based products when available (e.g. paint, glue, shoe polish). Also, avoid aerosol sprays – choose a pump spray or other alternative.
- Clean up your yard. Have a bunch of old tires in your yard and don't know what to do with them? Call 1-888-CLEAN-LA for disposal information.
- Make sure you "grasscycle." You can save water, fertilizer and your back by GRASSCYCLING.

ENVIRONMENTAL INFORMATION

Watershed Management Information Continued

From the County of Los Angeles Department of Public Works

- Report illegal dumping. To report illegal dumping anytime, day or night, call 1-888-CLEAN-LA or fill out an online form at www.888CleanLA.com.
- Keep sanitation workers safe. When thrown in with the regular trash, household hazardous waste can injure sanitation workers. In addition, landfills are not intended or permitted for those types of waste, which could impact groundwater.
- Don't flush, even if in a rush. When flushed down a toilet, sink or drain, household hazardous waste goes through the sewage system to treatment plants not equipped to handle hazardous waste.
- Buy just what you need to do the job. Give leftover materials to a friend, neighbor, business or charity that can use them up.
- Be smart when you apply pesticides or fertilizers. Do not apply pesticides or fertilizers before it rains. Not only will you lose most of the chemicals through runoff, but you will also harm the environment. Do not over-water after application. Read the label and do not apply more than recommended.
- Purchase re-refined motor oil for your vehicle. Re-refined oil has been recycled and then reprocessed so it is as good or better than virgin oil. By using re-refined motor oil, you are closing the recycling loop and saving natural resources.
- Don't do time. The illegal dumping of hazardous waste carries a minimum fine of \$1,000 per day per violation up to \$100,000 per day per violation and imprisonment.

WHAT INFORMATION DOES THE 1-888-CLEAN-LA HOTLINE OFFER?

The 1-888-CLEAN-LA hotline allows residents to report illegal dumping and clogged catch basins, as well as receive information regarding stormwater pollution prevention, certified used oil recycling centers, Smart Gardening workshops and Household Hazardous Waste and Electronic Waste Roundup events. Additionally, callers can receive information about the stormwater pollution prevention program community clean-up events, pilot programs, and advertising public service announcements.

ENVIRONMENTAL INFORMATION

A Short History of Solid Waste

From the California Integrated Waste Management Board

In charting a course for municipal solid waste management in the 21st century in California, it would be instructive to review the California experience in waste management in the century that is drawing to a close. This involves both the events and cultural realities that shaped the response of the existing waste management infrastructure at the time, and the profound advancements in engineering, operations, legislation, and regulation that have reversed imprudent practices and put us on course to achieve our future goals.

In the early 1900s, workers operated as scavengers, using horse-drawn wagons to collect municipal solid waste. What they did with that waste revealed the double-edged sword of waste management in those early days.

Those first recyclers recovered metals, paper, rags, reusables, bottles, and food waste, which were sold by them to eager industries. Thus, we can see that recycling is nothing new, and that market responsiveness was the key element of waste operations from the beginning.

On the other hand, there were unsafe and unhealthy methods of dealing with waste that, in that time, were considered acceptable. Backyard open burning was commonplace, and the ashes and other nonrecoverable wastes were delivered to burn dumps located within each region.

During World War II, new technologies were developed out of a necessity to meet the needs of our troops, and some of these provided a glimpse of future practices. For instance, the invention of “K” rations to feed our soldiers preceded convenience packaging of products in the consumer sector that continues to this day.

Following the war, California was at the forefront of unprecedented growth in the American economy. And as we grew, lifestyle patterns changed almost as dramatically. We moved out of the inner cities and into suburbs, in the process establishing new localities in need of services. The role of solid waste management was intensified, and again, there were practices that were sound, and some that were not.

Some waste was being regularly barged to the oceans and dumped there. Some was being placed in open dumps and burned every evening. And some was sent to no frills incinerators. Each of these activities were taking place without any pollution controls.

The focus of collection companies changed in the 1960s. New equipment enabled quicker and heavier loads of waste. Recovery of recyclables was taken down to the individual customer level. The driving force was to keep costs low for residents and

ENVIRONMENTAL INFORMATION

A Short History of Solid Waste Continued

From the California Integrated Waste Management Board

businesses, and to accommodate a lifestyle change that revealed a “throw away” society.

The focus on sanitary landfilling had begun in the 1940s and one of the nation’s leaders in the effort was Californian, Jean Vincenz, the Fresno Director of Public Works. He is recognized as a pioneer in developing sanitary methods for disposing of trash in large urban areas. Later, the California Department of Health Services became one of the first State Health Departments in the nation to establish landfill standards and seek elimination of open dumps.

The 1970s saw new regulations and federal air pollution standards focused on the new construction standards for sanitary landfills and operating incinerators. The result of the standards were better engineered landfills and the closure of old incinerators. The Federal Resource Conservation and Recovery Act of 1976 encouraged resource recovery.

From the late 1980s to the present, two events defined California’s mission for the future. The first was the passage of the Integrated Waste Management Act of 1989. The second, in 1993, was the Federal Resource Conservation and Recovery Act Reauthorization, which set unprecedented national standards for safety and efficiency for landfill management.

The driving issue of the 1980s was a perceived landfill shortage which was best illustrated by the 1987 “garbage barge,” which left Long Island, New York in search of a final disposal site. The floating barge was a lead story in the print and television mediums throughout the nation. National emphasis was focused on MSW management.

These events spurred renewed emphasis on reducing, reusing and recycling materials within the waste stream. The commitment to ensure safe landfilling and combustion of MSW was reinforced through legislation and regulations to strengthen the commitment to the health and safety of our citizens in California as well as the protection of our environment.

AB 939 mandated cities and counties, working off the base year of 1990, to reduce the amount of waste landfilled in 1995 by 25% and in 2000 by 50%. This mandate carried an attention grabber – \$10,000 per day fines for cities and counties that refused to be part of the solution.

As a result of the commitment by citizens, cities, counties, solid waste management companies, and other recyclers, an infrastructure costing hundreds of millions of dollars to build is in place in California, collecting, sorting, processing, and transporting recovered recyclables. Elements of this infrastructure include collection programs, recycling facilities,

ENVIRONMENTAL INFORMATION

A Short History of Solid Waste Continued

From the California Integrated Waste Management Board

materials recovery facilities, and processing facilities.

Among those reliant upon this infrastructure are California's cities and counties, who have developed and are implementing source reduction and recycling elements – the menu of programs a jurisdiction will look to in its quest to reduce their trash going to landfills by 50%.

A great amount of personal and public money has been borrowed to build this infrastructure in response to the mandates established by AB 939, and with such a formidable infrastructure in place, the programs resulting from adherence to the law will continue beyond the year 2000.

There can be little doubt that a concerted effort is critical. For most of the first half of the last century, we recovered for reuse about 75% of the waste we generated. That impressive figure dropped to 7.5% in the 1970s and 9% in the 1980s.

California is doing much better today. We've restored the concept of market responsiveness to promote greater uses for high quality, postconsumer materials. We've instilled greater confidence in waste disposal through environmentally sound, technically state-of-the-art landfills. And we've seen a pronounced shift in consumer culture, with greater philosophical value placed on diversion over disposal, and in practice, more sensible disposition of household waste. In 1997 we were diverting 32% of our waste, staying on track toward 50% by the year 2000.

California is a prosperous state, and we generate more waste every year as a result of strong economic development and population increases. We must remain well-positioned to effectively manage our waste, and recover recyclables through an infrastructure that rivals any in the world.

Our mission now is to predict the future, identify the challenges it presents, and fashion our response.

ENVIRONMENTAL INFORMATION

Legislative Review

AB939

Assembly Bill 939 was put into law in 1989. This bill really was the first legislative effort to begin the process in creating opportunities to recreate cities (jurisdiction) and put the on the path to developing sustainable living environments. Assembly Bill 939 created a method for cities to begin understanding and dealing with the amount of trash, recyclables, and other materials each city produces. This legislation put into place requirements and mandates, regarding waste reduction and recycling that all cities had to comply with.

In 1990 all cities had to produce a document that was sent to the state that stated all of the materials they produced and sent to landfills. They had to document how much they were recycling, number and type of businesses there, the residents and the types of housing, population, and many other factors that contributed to the amount of waste that was being disposed of in the landfills they were using. Cities had to figure out where they were starting from and then submit a plan (SRRE) that would show how they were going to meet the mandates setup in AB939.

The first goal set forth in AB939 was that each city had to reduce the amount of waste they were sending to landfills in 1990 by 25% by 1995. Some cities made this goal, many did not. Continuing on the cities had to send annual reports to the State, CIWMB (California Integrated Waste Management Board), stating the types of diversion programs they had started, when they started them, and how they were doing. They had to calculate the amount of trash going to the landfills and figure out what was diverted, in many cases recycled, for each year. The second goal set forth in AB939 was the goal of 50% diversion from the original (SRRE), which was to be met by all cities by the year 2000. Many cities did make this goal, but many did not. In AB939 the objective for diversion must be met or there is a chance the city will be fined or put on a probation period where they have to complete certain short-term goals in order to show a “Good Faith Effort.” So, many cities filed for extensions and they are currently working on meeting the 50% goal. Many cities are moving past that goal and on their own are trying to increase the diversion in their cities by offering new and more productive programs to residents and businesses. There is one area of every city that AB939 did not include in the original legislation: Schools! This is where the next legislation comes in.

ENVIRONMENTAL INFORMATION

Legislative Review Continued

SCHOOL DIVERSION AND ENVIRONMENTAL EDUCATION LAW

Senate Bill 373 was passed to begin the process of including schools in reducing solid waste heading to landfills. SB373 was authored as the School Districts Solid Waste Recycling Bill. It was implemented to strengthen the education framework in science and provide incentives to schools to assist in the development and implementation of waste management programs through education. The California Integrated Waste Management Board (CIWMB) and the State of California (taxpayers like you and me) funded grants to help implement these programs. The Office of Integrated Environmental Education was established to develop a unified education strategy on the environment for elementary and secondary schools. This bill required that a model school program be developed for waste reduction and recycling, but there were not any mandates or goals attached to the bill. Rather, this bill simply put into place the structure for getting environmental concepts into classrooms in the State of California.

EDUCATION AND THE ENVIRONMENT INITIATIVE

In 2003, AB1548, later designated “The Education and Environment Initiative,” was signed into law. This began the process of creating California’s first official “Environmental Principles and Concepts.” (The Environmental Principles and Concepts are presented on page 8 of this notebook). This bill also renamed the Office of Integrated Environmental Education as the Office of Education and the Environment (OEE).

This bill required that California Environmental Protection Agency and CIWMB work with the State Department of Education, State Board of Education, Office of the Governor’s Secretary of Education and Resources Agency to develop a Model Curriculum for California’s K-12 schools. This Model Curriculum, currently under development, will be approved by the State Board of Education agencies. This law also requires that the Environmental Principles and Concepts and Model Curriculum align with the State’s academic content standards.

In 2005, AB1721, a “clean-up” bill for AB1548 was passed by the Legislature and signed into law.

TEACHER INFORMATION



NAME: _____ DATE: _____

HOME ADDRESS: _____ CITY: _____ ZIP CODE: _____

HOME PHONE: _____ CELL PHONE (OPTIONAL): _____

SCHOOL NAME: _____ SCHOOL PHONE: _____ SCHOOL FAX: _____

SCHOOL ADDRESS: _____ CITY: _____ ZIP CODE: _____

EMAIL ADDRESS: _____ PREFERRED METHOD OF COMMUNICATION: _____

SUBJECT(S) TAUGHT: _____ GRADE(S): _____

TOTAL NUMBER OF STUDENTS TAUGHT: _____ TOTAL NUMBER OF STUDENTS IN SCHOOL: _____

SCHOOL DISTRICT: _____

WHERE DID YOU HEAR ABOUT GENERATION EARTH? _____

WHEN IS A GOOD TIME FOR YOU TO MEET? _____

FOR OFFICE USE ONLY

COUNTY SUPERVISORIAL DISTRICT: _____

RECYCLING COORDINATOR: _____

STORMWATER COORDINATOR: _____

PROJECT FOCUS: _____

FIELD TRIP REQUEST



As part of completing an Environmental Service Learning Project, you may request a bus for a field trip. Please fill out the following information.

TEACHER NAME: _____

TEACHER CELL PHONE NUMBER (FOR FIELD TRIP DAY USE ONLY): _____

SCHOOL NAME: _____

SCHOOL ADDRESS: _____

SCHOOL PHONE NUMBER: _____

DATE OF FIELD TRIP: _____

LOCATION AND ADDRESS OF FIELD TRIP: _____

NUMBER OF STUDENTS ATTENDING FIELD TRIP: _____

NUMBER OF ADULTS ATTENDING FIELD TRIP: _____

WHAT TIME SHOULD THE BUS PICK YOU UP? _____

WHERE SHOULD THE BUS PICK YOU UP? (give specifics, in front of the school, by the flagpole) _____

WHAT TIME DO YOU NEED TO BE BACK AT SCHOOL? _____

PLEASE FAX THIS FORM TO GENERATION EARTH ADMINISTRATION AT (818) 753-4645.

FOR OFFICE USE ONLY

NAME OF BUS COMPANY: _____

CONFIRMED BUS ON: _____

CONFIRMED WITH TEACHER ON: _____

FINAL CONFIRMATION WITH BUS COMPANY DAY BEFORE FIELD TRIP: _____

SUPERVISORIAL DISTRICT: _____